AMIENS CATHEDRAL AND MR. GOODYEAR'S "REFINEMENTS." A CRITICISM.

By John Bilson [*F.*], F.S.A.

DURING the last ten years Mr. William Henry Goodyear, of the Brooklyn Museum of Arts and Sciences, U.S.A., has published several papers and memoirs describing certain irregularities in mediæval buildings for which he claims the distinction of "refinements," assuming them to be due not to accidental or undesigned causes, but to deliberate intention and design on the part of their builders. Mr. Goodyear's publications have been noticed in the English architectural press, but until recently they did not command very serious consideration in this country. Last September, however, an exhibition of his drawings and photographs—an "Exhibition of Architectural Refinements"—was opened in Edinburgh under the auspices of the Edinburgh Architectural Association, and as a result of this exhibition there now seems to be a disposition in some quarters to hail Mr. Goodyear's supposed discoveries as having an extremely important bearing on the history of architecture. The fact that the President and Council of the Institute, the Presidents of other architectural societies, and three or four Professors of Architecture appeared in the list of Patrons of this exhibition has been cited by Mr. Goodyear himself as evidence of their sympathetic support. How far the patronage of the exhibition by the Institute and the Professors was intended to convey acceptance of his theories, or how far it was merely an act of hospitality to a learned Professor from "the other side," it is not for me to say. We have, however, been told that the teaching of this exhibition will probably change the views of architects and archæologists upon some of the hitherto unexplained features in the architecture of the middle ages, and I understand that some of our Scottish colleagues have received its teaching with something like enthusiasm. In these circumstances, we may well ask whether we are justified in accepting such teaching. Or am I right in believing that the chief value of Mr. Goodyear's investigations will be found in the fact that they repeatedly afford in themselves evidence in disproof of the theories which he bases upon them? The object of this paper is to give a definite answer to these questions.

Everyone who has read Mr. Goodyear's publications must have been struck by his remarkable energy and enthusiasm in prosecuting his researches. The large number of churches covered by his investigations renders it difficult to test his theories in each particular building, or to arrive at a definite and final summing-up of the whole case in a short general paper. I do not propose, therefore, to roam at large over the entire area under review. I shall confine

myself entirely to what Mr. Goodyear has written about the churches of Northern France, and almost entirely to a single typical cathedral.*

The irregularities which Mr. Goodyear claims as intentional "refinements" may be roughly divided into two classes:—

I. Obliquity of alignment in plans, including want of parallelism in walls and piers, deflections of axis, curves of alignment (stated as uncommon in mediæval churches †), and asymmetric plans generally.

II. Walls, piers, and columns out of plumb, sometimes straight, but more generally described as "vertical curves."

I do not suggest that this classification includes all the irregularities which Mr. Goodyear believes to be "refinements," but it covers the great majority of the examples noted by him in his publications, and those which it does not include are not material to the examination which is the immediate object in view.

Now, in deciding whether these irregularities are due to accidental causes or whether they are the result of deliberate intention, the facts so industriously collected by Mr. Goodyear must be considered in their relation to many other facts which bear upon and help to elucidate the history of the particular buildings in question. In speaking of oblique plans, Mr. Goodyear does indeed say that "it has been tentatively held by various high authorities that the deflected choirs of the northern cathedrals are due to building at various dates and to imperfect orientation, or joining together, of constructions of different periods."‡ But in the majority of the cases which he discusses (reference is here made to irregularities of both the above classes), he appears to treat each building as if it were the product of a single mind, constructed in a single building-campaign. For him the only alternatives to intentional construction seem to be accidental movement, or careless or inefficient construction.§ It may safely be asserted, however, that by far the greater number of irregularities in plan arises from neither of these alternative causes.

It must be borne in mind that the great majority of the larger churches of the middle ages have been built on the sites of earlier structures. Even if not a single stone of the earlier building be left standing, we may find indications of its influence in the reconstructed church, as numberless instances prove. The cardinal fact to be remembered is that the mediæval church never ceased to be used. Let us confine ourselves to the consideration of churches which are virtually of one period of building activity, and let us take a most common and simple case in which reconstruction was commenced by the erection of a new choir. The old nave would remain standing, kept in use as long as possible, and temporarily closed towards the east, until the new choir could be occupied. Then the reconstruction of the nave would be undertaken, frequently not as a whole, but in successive sections of a few bays at a time,‖ each section being temporarily partitioned off until it was completed, and then thrown open to the already reconstructed portion of the building. In these circumstances, and in the absence of such instruments as would now be used, it must frequently have been a matter of great

* The following are the publications by Mr. Goodyear to which reference will be made by the short title in brackets after each:—

Memoirs of Art and Archæology, vol. i. No. 4. "Vertical Curves and Architectural Refinements in the Gothic Cathedrals of Northern France and in Byzantine Churches at Constantinople." Published by the Macmillan Company for the Museum of the Brooklyn Institute of Arts and Sciences, 1904. [*Memoirs.*]

The Architectural Record, vols. xvi. and xvii. "Architectural Refinements in French Cathedrals." New York, 1904 and 1905. [*Architectural Record.*]

Edinburgh Architectural Association. Illustrated Catalogue of Architectural Refinements. Edinburgh, 1905. [*Catalogue.*]

† *Catalogue*, 6.

‡ *Catalogue*, 63.

§ *Catalogue*, 4.

‖ For construction by bays, see L. Demaison, *Les architectes de la cathédrale de Reims*, in the *Bulletin archéologique du Comité des travaux historiques*, 1894, and *La cathédrale de Reims*, in the *Bulletin Monumental*, lxvi. 24 (1902).

difficulty to ensure accurate setting-out, and a trifling initial error might easily lead to wide divergence and marked irregularity. And this difficulty would often be greatly increased by more complicated conditions than those simple ones just suggested, such, for example, as the building of aisle walls outside of and beyond an existing nave, the walls or arcades of which would not be taken down until these new aisle walls had been carried up, and perhaps only then taken down piecemeal as the new piers and arcades were built in sections. Is it any matter for surprise that, under such conditions, irregularities or incorrect alignments should result? Viollet-le-Duc long since gave the natural explanation.* Two of the most experienced mediæval archæologists in England and France respectively have also expressed their conviction on this subject in almost identical terms. Mr. Micklethwaite says: "The distortion of some plans for which strange and fantastical reasons have been invented, appears natural enough when we remember the conditions under which the builders worked and the difficulty which they must have experienced, with the imperfect instruments at their command, in setting out a complicated building on a site already occupied." † And M. de Lasteyrie has recently stated his opinion that, in the majority of cases, deviations of axis are the inevitable result of the conditions under which the builders of the middle ages worked, and of the imperfections of the methods at their disposal for adjusting successive constructions in vast buildings, the separate parts of which were never erected all at the same time. ‡ Irregularities of the same kind as those noted by Mr. Goodyear are familiar to all architects who have devoted themselves to the measurement and analysis of plans of mediæval churches. If I may be allowed to speak from my own experience in this work, I may say that I have never found any such irregularities which could not be accounted for by common-sense building-reasons. On the contrary, irregularities of this kind often afford valuable help in elucidating the precise method and order in which a church has been built.

I have already mentioned in this JOURNAL § a story quoted by M. de Lasteyrie, which is valuable as showing how the architects of the middle ages regarded unnecessary irregularities. At Metz there is a church, built by the Celestines between 1371 and 1409, which shows a very pronounced deflection of its axis. A chronicle tells us that the architect, ashamed of having made his work so crooked, died of grief and distress. ‖ It would have been a consolation to him if he had known that (according to Mr. Goodyear) oblique plans were preferred by mediæval builders "to the formalism of the rectangular plan, and on account of the optical mystification and picturesque effects resulting." ¶

The above remarks apply more particularly to irregularities in plan. It is equally impossible, however, to arrive at any satisfactory conclusion with regard to the irregularities included in Class II. (which Mr. Goodyear describes as "vertical curves," "widening refinements," "parallel leans," &c.) if they are to be regarded simply as isolated facts. They, too, must be considered in their relation to many other facts which go to make up the story of the structure. We must not only know the architectural history of the building in question, and the precise order in which its various parts were erected, but we must study its structure, in order to judge how far the problems of unequal loading, abutment of vaults and arches &c. have been successfully solved, and what weaknesses would be likely to develop from any defects of design and construction; we must exhaust the documentary history of the structure, from its erection to the present day, in order to ascertain what repairs, renewals or alterations have been carried out, and the reasons for their execution; and, finally, we must

* *Dictionnaire raisonné de l'architecture française*, iii. 236–7.

† *Archæological Journal*, xxxvii. 371.

‡ *La déviation de l'axe des églises: est-elle symbolique?* p. 308.

§ P. 116 *supra*.

‖ "Honteux d'avoir fait son œuvre ainsi tortue, en mourut de deuil et de tristesse." Kraus, *Kunst und Alterthum in Elsass-Lothringen*, iii. 675.

¶ *Catalogue*, 26.

carefully examine the building in its existing condition in order to detect any indications of movement in the fabric. Then, and only then, shall we be in a position to understand the real cause and meaning of these "refinements."

It is curious to observe how little considerations of this kind seem to have influenced Mr. Goodyear in his investigations.* In some instances, indeed, we find him naïvely stating facts, which are obviously due to considerations of structure, without seeing how completely they disprove his theories.

There is less justification, however, for his neglect of historical material ready to hand. For example, he devotes much space to a description of the deviations from the perpendicular in the nave of Notre Dame, Paris,† but he never makes any mention whatever of the important alterations which were executed in this nave towards the middle of the thirteenth century, although these alterations included a serious modification of the system of abutment, and although they have been described in detail by Viollet-le-Duc.‡ Or again, Mr. Goodyear describes "widening refinements" in the nave and aisle of Saint-Remi, Reims,§ but he says nothing whatever of its dates and construction. Yet this is a case of a nave built during the first half of the eleventh century,‖ of quite remarkable dimensions for its period (with a clear width of about 44 feet, and walls over 80 feet in height), which was originally finished with a wood ceiling, but was covered with stone vaults about 1170, when the system of vaulting of its aisles was also completely altered.¶ Viollet-le-Duc tells us that these works had so affected the stability of the building as to necessitate the reconstruction of the high vaults in light materials, and the restoration of the lower parts, some years before he wrote in 1868.** Obviously it is impossible to decide whether deflections and irregularities are due to accident or intention without first carefully weighing considerations of this kind.

If the deviations from the perpendicular noted by Mr. Goodyear in the French churches are to be considered as calculated and intentional "refinements," displaying "extreme subtlety and extraordinary constructive skill and forethought,"†† and if they were regarded by the mediæval builders "as the necessary conditions to the creation of a work of art in architecture,"‡‡ surely they must have been applied with some sort of method and consistency. But this is precisely what we do not find. Let us take, for example, the observations recorded by Mr. Goodyear of the choir and nave of Notre Dame, Paris. The vaulting-shafts at the springing of the apse curve are perpendicular. The vaulting-shafts of the choir itself *converge* ("strong vertical curves leaning *into* the choir"). The crossing piers *diverge*, the eastern pair with a widening of 21 inches, the western pair with a widening of 12 inches. The vaulting-shafts of the nave *diverge*, with a widening of from 7 to 12 inches. The piers at the west end of the nave are perpendicular.§§ To anyone who is acquainted with the practical common-sense methods of mediæval builders, the mere statement of these erratic deviations is sufficient absolutely to forbid the idea of intentional setting-out and execution. If this is a case of optical effects being studied, in order to avoid "a contracted appearance in the upper part of a church interior,"‖‖ why the *inward* lean of the vaulting-shafts of the choir? If, on the other hand, it is merely a case of the preference for delicate curves to

* In his account of his investigations at Amiens he gives more particulars than usual of the historical facts subsequent to the erection of the building. I shall presently discuss his interpretation of them.

† *Memoirs*, i. No. 4, 35 *seq.*; *Architectural Record*, xvi. 439 *seq.*, 569 *seq.*; *Catalogue*, 126.

‡ *Dictionnaire*, ii. 292.

§ *Memoirs*, i. No. 4, 17, and photograph No. 19 (p. 18).

‖ Commenced in 1005, and consecrated in 1049. L. Demaison, *Date de l'église de Saint-Remi de Reims* (1883).

¶ For drawings of this nave as originally constructed, see Viollet-le-Duc, *Dictionnaire*, ix. 240, and Dehio and von Bezold, *Die Kirchliche Baukunst des Abendlandes*, plate 46 (4).

** *Dictionnaire*, ix. 241, *note*.

†† *Catalogue*, xiv.

‡‡ *Catalogue*, viii.

§§ *Architectural Record*, xvi. 444.

‖‖ *Catalogue*, xiv.

straight lines, why are the piers at each end of the church perpendicular? What rational motive can be suggested to account for such "refinements"? And yet Mr. Goodyear actually tells us that "as different phases of curvature," they come "*under one explanation.*"* Such deviations can be accounted for easily enough if, rejecting the hypothesis of intentional construction, we study the structure itself. M. Choisy compares the Gothic pier to a ninepin —"une quille exposée à des mouvements de dévers; prise entre les contre-poussées de la voûte et de l'arc boutant, elle risque, si les efforts sont imparfaitement balancés, de s'incliner légèrement dans un sens ou dans l'autre."† The truth of this observation will be evident to those who have a practical knowledge of mediæval construction.

I now turn to the typical church, the cathedral of Amiens, which I have selected for a detailed examination of Mr. Goodyear's observations and theories. Mr. Goodyear names Amiens Cathedral among the most conspicuous cases of widening which he has so far observed in France,‡ and I think it will be admitted that no better example could be chosen for testing his theories. Viollet-le-Duc calls it "l'église ogivale par excellence,"§ and it is generally recognised that its nave marks the culminating point of Gothic architecture. We may safely assume, therefore, that whatever methods were most esteemed by the ablest builders of the middle ages would have found their fullest expression in this acknowledged masterpiece. Mr. Goodyear suggests that the multiplicity and complexity of the phenomena which he has observed in Notre Dame, Paris, are due to the unusual care which was lavished on the cathedral of the capital of France.‖ This consideration applies with much greater force to the far more perfect cathedral of Amiens. Moreover, at Amiens we find an excellent illustration of real refinements of design in the careful study of the effects of perspective, as shown in the profiles of the capitals and bases in the upper part of the nave.¶ A further reason for the selection of Amiens lies in the fact that such an examination as I propose to attempt is immensely facilitated by the recent publication of M. Georges Durand's work,** which may be described without exaggeration as the best monograph ever published of any mediæval cathedral. I must add, too, that M. Durand has most kindly placed his intimate knowledge of the cathedral at my disposal, by answering questions which I have addressed to him on points upon which I sought further information.††

The nave of Amiens Cathedral was commenced in 1220, and M. Durand gives reasons for his conclusion that it was completed by 1236.‡‡ This first section of the work would include the vaulting of the nave, and the western arch of the crossing (15, 16).§§ From the character of the design and workmanship it would seem that this first section also included the whole of the lower part of the transept (both arms) up to and including the sculptured string below the triforium, the triforium stage on the western side of each arm, the vaulting-shafts on the western side up to the top of their capitals, and the clerestory windows next the west side of the crossing (15*a b*, 16*a b*).‖‖ The remainder of the western side, the corresponding parts of the eastern side, and the high vaults of the transept go with the choir.

* *Architectural Record*, xvi. 457.

† A. Choisy, *Histoire de l'architecture*, ii. 311.

‡ *Architectural Record*, xvi. 441.

§ Viollet-le-Duc, *Dictionnaire*, ii. 330.

‖ *Catalogue*, 146.

¶ Viollet-le-Duc, *Dictionnaire*, vii. 529.

** *Mémoires de la Société des Antiquaires de Picardie. Monographie de l'église Notre-Dame, cathédrale d'Amiens*, by Georges Durand; vol. i. (1901); vol. ii. (1903). Amiens and Paris. Vol. i. was reviewed in the preceding volume of this JOURNAL, p. 97.

†† It is, perhaps, worth notice that M. Durand's monograph is known to Mr. Goodyear, who quotes it, both in the *Architectural Record*, vol. xvi., and in the Edinburgh *Catalogue*. In the notes below, I have distinguished between references to M. Durand's work and unpublished communications from him which are so described.

‡‡ G. Durand, *Monographie*, i. 29.

§§ In the small plan given here for reference (fig. 1) I have followed M. Durand's very convenient system of reference (based on that often used for maps), in which the piers are numbered longitudinally, odd numbers on the north side and even numbers on the south side, and lettered *a*, *b*, *c*, *d* transversely.

‖‖ G. Durand, *Monographie*, i. 30, 32.

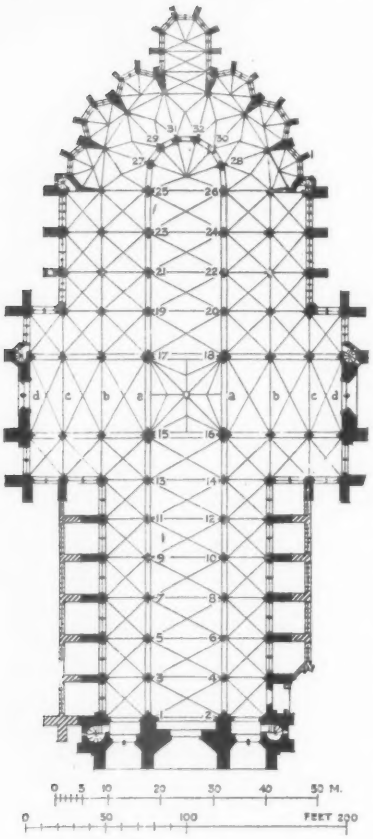


FIG. 1.—PLAN OF AMIENS CATHEDRAL.

The erection of the choir was probably undertaken very shortly after the completion of the nave. Bishop Arnould, who died in 1247, was buried between the two eastern piers of the apse (31, 32*a*).* His death was followed by a pause in the work, and some damage was caused by a fire in 1258. The date of the completion of the choir is indicated by the date of 1269 in the glazing of the central clerestory window of the apse.† The high vaults of the choir and of both arms of the transept, the vault of the crossing and its north, east, and south arches (15, 17 ; 17, 18 ; 16, 18) appear to be practically contemporary works. In 1279 there was a solemn translation of relics in the presence of the Kings of France and England. The gable ends of the transept above the level of the aisle vaults were only closed later : that of the south transept at the end of the thirteenth or beginning of the fourteenth century, except the gable itself and the rose which are much later ; that of the north transept at the beginning of the fourteenth century, except the gable itself, which was apparently never finished.

The chapels between the buttresses of the aisles of the nave (distinguished by hatching on the plan, fig. 1) were added at various dates between the end of the thirteenth century and 1375.

It is unnecessary to describe here the system of construction, for it has been admirably analysed by Viollet-le-Duc ‡ and by M. Durand in his monograph. Fig. 2 § will give a general idea of the structural system of the nave. The high parts of the choir are less carefully constructed than the nave,‖ and the system of abutment of the choir and transept differs entirely from that of the nave—a point to which I shall have occasion to refer presently.

It is necessary, however, in connection with the subject under discussion, to realise the vast dimensions of the building. The main spans of the nave, choir, and transept are 47 feet 10 inches in width from centre to centre of the piers of the great arcades, and 40 feet 10 inches in clear width ; the height from the floor to the vault is 138 feet 9 inches. The side aisles of the nave and transept are 28 feet 4 inches in width from the centre of the piers to the inner face of the aisle wall, and 24 feet 10 inches in clear width ; the height from the floor to the aisle vaults is 61 feet 8 inches.¶ The width of the bays of the nave is 24 feet 3 inches from centre to centre of piers.

If we examine the plan of Amiens Cathedral in order to discover the "refinements" which I have enumerated above under the heading of Class I, we seek in vain. The align-

* G. Durand, *Monographie*, i. 33. † *Ibid.* i. 37.

‡ *Dictionnaire*, ii. 328–333 ; iv. 167–173.

§ From Dehio and von Bezold, *Die Kirchliche Baukunst des Abendlandes*, pl. 599.

‖ G. Durand, *Monographie*, i. 282.

¶ One can, perhaps, best realise the great scale of the church by comparing its *side aisles* with the *main spans* of some of our English churches of the second class in point of size. The aisles of Amiens have much the same dimensions of width and height as the choir of Chichester ; they are higher than the nave of Lichfield, and only a little lower than Exeter, Wells, and Beverley.

ment of the axes, both longitudinal and transverse, is absolutely true, and presents no deflection whatever. The axis of the transept is exactly at right angles with the main axis of the church. In England the same thing is true of Durham, our finest Romanesque cathedral, and of Salisbury, our most complete cathedral of the thirteenth century. If obliquity of plan was ever regarded by mediæval builders as a "refinement," if they ever considered it to be an advantage "on account of the optical mystification and picturesque effects resulting," * why do we find no trace of it in these masterpieces? Simply, I believe, because intentional obliquity of plan was entirely foreign to mediæval ideas. In connection with the practical explanation given above of such irregularities, it is worth notice that Amiens Cathedral seems

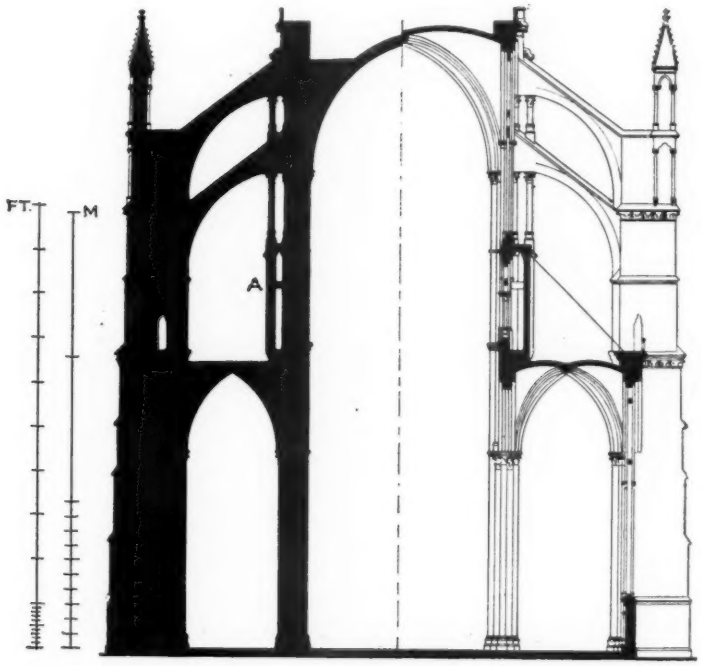


FIG. 2.—SECTION OF NAVE. FROM DEHIO AND VON BEZOLD.

to have been built on a clear site,† except as regards the church of Saint-Firmin, which probably stood on the site of the north transept, and was demolished when the nave was practically finished; ‡ that of Durham it is recorded that the previous church was taken down before the foundations of the new church were commenced; § and that Salisbury Cathedral was built on an entirely new site.

The "refinements" which Mr. Goodyear has observed at Amiens came under the heading of what I have called Class II. He calls them "widening refinements," "vertical curves," and "parallel leans." ‖ I am convinced that they are not refinements at all, but that they are

* *Catalogue*, 26.

† Viollet-le-Duc says there is reason to believe that the plan of the chevet was decided before the nave was commenced. (*Dictionnaire*, ii. 331.)

‡ G. Durand, *Monographie*, i. 29.

§ Mr. Goodyear suggests that variations in the width of sequent bays at Durham may have "perspective illusive purpose" (*Scribner's Magazine*, xxiv. 382), a suggestion which I believe to be purely imaginary.

‖ *Memoirs*, i. No. 4, 26 *seq.*; *Architectural Record*, xvi. 447 *seq.*; *Catalogue*, 119 *seq.*

simply the accidental results of movements which have taken place in the structure. They are precisely such results as we should naturally expect to find in a building of this character; indeed, they might reasonably have been expected to be much more pronounced had not the building been designed and executed with remarkable care and skill. Moreover, the movements in the structure to which they are due are proved both by the past history and present condition of the building.

Mr. Goodyear argues that the widening which he has observed at Amiens must be accepted as constructive, because, if it were due to accidental movement, it must have caused the collapse of the vaulting; because he thinks that he has the authority of Viollet-le-Duc for denying accidental movement to the extent involved; and because, as he thinks, the record of the repairs confirms his conclusion. It will be convenient to deal with these arguments in this order.

Mr. Goodyear estimates the total divergence at the crossing at 2·80 feet. He says that one of the piers bends into the nave about 0·20 foot, and then curves outward about 1·40 feet, which he doubles to obtain the total widening.* If, however, the piers were originally built plumb, the divergence from the vertical would be 1·20 feet, giving a total widening of 2·40 feet, which amounts to about *one-sixteenth* of the original clear span. Mr. Goodyear says that no vaulting could spread to this extent without collapsing.† Assuming for the moment that his figures are correct, I venture to think that his conclusion is more than doubtful. Movement to this extent would no doubt be serious, but if it were gradual, and if the abutments remained rigid when the given extent of widening had been reached, there would, I think, be no question of the collapse of the vault.‡ It is unnecessary, however, to discuss this point, for, as I shall presently show, we have definite evidence to prove that the extent of the divergence is nothing like so great as Mr. Goodyear believes it to be.

Mr. Goodyear quotes§ the following passage from Viollet-le-Duc:—"Cependant cette nef, dont la hauteur est de 42m. 50 sous clef, et la largeur d'axe en axe des piles de 14m. 60, ne s'est ni déformée, ni déversée. La construction n'a subi aucune altération sensible; elle est faite pour durer encore des siècles, pour peu que les moyens d'écoulement des eaux soient maintenus en bon état."‖ As this passage occurs in a volume of the *Dictionnaire* which was published in 1859,¶ and as Viollet-le-Duc was in charge of the works at the Cathedral from 1849 to 1874, Mr. Goodyear concludes that Viollet-le-Duc was not aware of the vertical divergence which he (Mr. Goodyear) has observed. But, in spite of what Mr. Goodyear has written about this nave, the divergences from the perpendicular are so slight that they are inappreciable to the eye, and they may therefore quite well have been considered by Viollet-le-Duc as a negligible

* *Architectural Record*, xvi. 450; *Memoirs*, i. No. 4, 27.

† *Architectural Record*, xvi. 462.

‡ I give two examples which have recently come under my personal observation:—

The north aisle of the nave of Blyth Church (Nottinghamshire) is covered with unribbed groined vaulting, dating from the end of the eleventh century. The outer wall of the aisle, which afforded an insufficient abutment to the vault, has been thrust irregularly out of plumb, and there can be no possible question of "refinement" here. The widening, which, be it noted, is due to movement on one side only, amounts in one part to *one-thirteenth* of the original span. The curves of the transverse arches and of the vault surfaces are much distorted, and the latter are cracked; but the vaulting still stands, and there is no danger of its collapse. It is scarcely necessary to remark that a groined vault on semicircular arches is far inferior in point of elasticity to a ribbed vault on pointed arches.

In the middle bay of the eastern aisle of the south transept of Beverley Minster, the aisle wall leans outward, owing to the thrust of the vault on a wall with a defective foundation which has been underpinned in modern times. The movement is quite local, for at each end of the aisle the wall is practically plumb. The widening at the springing of the vault, which is due to movement on one side only, amounts to about *one-nineteenth* of the original span. The transverse and diagonal ribs exhibit scarcely any perceptible distortion, though when carefully examined they show a slightly broken line between the ribs and their *tas-de-charge*. There are some very slight cracks in the plastered surfaces of the vault cells, though these latter may have been repaired.

§ *Architectural Record*, xvi. 462; *Catalogue*, 120.

‖ *Dictionnaire*, ii. 330. Mr. Goodyear's quotation ends with the word "sensible."

¶ Mr. Goodyear says 1867. (*Architectural Record*, xvi. 462.)

quantity. He was perfectly aware, however, that the piers of the crossing had buckled, for, in his first report of 24th September 1849, written at the time when he was assuming the direction of the works at the Cathedral, he speaks of it in these words:—"Dès 1497, on avait jugé nécessaire de chainer les quatre piles de la croisée au niveau du sol du triforium; en effet ces piles s'étaient courbées et se séparaient du corps de la construction . . . . (Ce chainage) ne parait pas inutile. Il semble même que ce mouvement ne soit pas complètement arrêté, car en 1806 on fut obligé de soutenir au moyen d'étriers en fer reliés à la charpente une des nervures de la grande voûte de la croisée."* He speaks of the buckling of these crossing piers in the same volume of his *Dictionnaire*, in an article† to which Mr. Goodyear himself refers.‡ In the same report he refers to the insufficient buttressing of the straight part of the choir, and says:—"Ceux de ces arcs boutants qui ne se trouvent pas dans la partie circulaire du chevet, se sont relevés par suite de la poussée des hautes voûtes du chœur. Ils ont dû être alors doublés au XVe siècle."‡ He says the same thing in the first volume of his *Dictionnaire*, published in 1858,§ and he adds more on the same subject in a later volume, where he says:—"Cette vaste construction a conservé son assiette, et les mouvements qui ont dû nécessairement se produire dans une bâtisse aussi étendue n'ont pu en altérer la solidité."‖ The authority of Viollet-le-Duc, therefore, hardly supports Mr. Goodyear's theories, and it becomes simply a question of the extent of the movements to which Viollet-le-Duc referred. On this point I shall presently show good reason for believing that Viollet-le-Duc was much more accurately informed than is Mr. Goodyear. Indeed, I cannot but think that if Viollet-le-Duc had lived to read Mr. Goodyear's writings, he would have been the first to defend Robert de Luzarches from the charge of deliberately building his piers out of plumb.

Let us now turn to the records of the repairs which have been executed in the Cathedral since its completion.

In 1498 a series of iron ties was inserted along the floor of the triforium, extending from the façade along each side of the nave, around the transepts, and on each side of the choir up to the springing of the apse.¶ Mr. Goodyear states that these ties were inserted "in order to stay the great piers at the crossing, which were thought to be bulging inward under the weight of the tower,"** and in a footnote he gives references to Viollet-le-Duc and M. Durand's *Monographie*. Viollet-le-Duc did indeed imagine that the weight of the central tower was the cause of the mischief, and he says that the ties were inserted "pour arrêter le bouclement des quatre piles de la croisée, fatiguées par la charge de la tour centrale, avant l'incendie de cette tour"; †† but he was misled by the idea that there was a stone tower over the crossing. M. Durand has proved that this was a mistake, and that the *clocher central*, like its successor, was a timber structure.‡‡ However, the passage from M. Durand's work to which Mr. Goodyear refers in his note says nothing of the weight of the tower; it reads—(the crossing piers) "bouclaient, sollicités par la poussée des voûtes des bas côtés et des grandes arcades,"§§ and this, as we shall see, was the opinion of the experts who inserted the ties. Mr. Goodyear's phrase, "*were thought to be bulging inward*," would seem to indicate that he thinks that the experts of 1498 were mistaken. In view of the importance of this point in its bearing on his theories, it will be well to consider the recorded facts in some detail.

In 1464 the Chapter were asking for contributions toward the work of the fabric of the Cathedral, which was in need of great and costly repairs.‖‖ On the 14th March, 1497–8, by

* Communicated by M. Durand.
† *Dictionnaire*, ii. 404, *note* 1.
‡ *Architectural Record*, xvi. 463.
§ *Dictionnaire*, i. 72. See also iv. 179.
‖ *Dictionnaire*, iv. 173.
¶ *Ibid.* ii. 404; G. Durand, *Monographie*, i. 205–6.
** *Architectural Record*, xvi. 463; *Catalogue*, 121.
†† *Dictionnaire*, ii. 404, *note* 1.
‡‡ G. Durand, *Monographie*, i. 512.
§§ *Ibid.* i. 61.
‖‖ "Ecclesia prædicta, proh dolor! maximis et sumptuosis indiget reparationibus." G. Durand, *Monographie*, i. 58, and *note* 1.

order of the Chapter, a commission composed of master Colart de Haudrechies, master Pierre Tarisel, master-mason, and master Pierre Blanc Regnier, master-carpenter of the fabric, Adrien de Hénencourt, the dean, Mathieu Vualquin, canon and cellarer, Pierre Dumas, canon and master of the fabric, and several others, inspected the Cathedral to examine the situation, and to suggest means of meeting it.* The report of the commission says that "the four principal pillars of the crossing of the said church are bent and arched on both sides by the thrust of the aisle vaults, and even the walls next these pillars are broken and open in consequence of the said thrust; and in like manner the said walls are broken towards the great doors of the said transept at like height."† This report describes precisely the state of things as it exists to-day. The cracks in the masonry of the spandrils of the great arcades show clearly enough in the bays next the crossing piers (13, 15*a*; 14, 16*a*; 15*a b*; 16*a b*; 17*a b*; 18*a b*; 17, 19*a*; 18, 20*a*), next the transept gables (15*c d*; 17*c d*; 16*c d*), and next the west end (1, 3*a*; 2, 4*a*).‡ The commission recommended the insertion of anchor bars of Spanish iron of good thickness, extending from the crossing to the extremities of the nave, choir, and transepts. As, however, this work would be too costly if executed entirely in Spanish iron, they suggested that the connecting pieces might be of oak, previously steeped in water for three months to preserve it from worm, and connected together by iron bands, pins, spikes, and cramps; and in order to keep them rigid they were to be fixed to the masonry at intervals by square iron spikes driven in to a depth of 6 or 8 inches. This plan was approved by the Chapter on the 16th March, and the cellarer was ordered to provide the necessary wood from the Chapter's forests. Probably, however, doubts were expressed as to the efficiency of wood for the purpose, for on the 25th March there was a further visit of a much larger commission, consisting, besides those who were on the previous commission, of further church dignitaries, the King's provost and the King's receiver at Amiens, two more carpenters, and two smiths. This commission confirmed the previous report as to the mischief, and decided that it was necessary to anchor the four crossing piers as before recommended, but that the anchors should be of good Spanish iron, and not of any other iron or wood. There was some difficulty in obtaining Spanish iron owing to the fact that France was then at war with Spain, but the Chapter found merchants who agreed to provide it in exchange for a certain quantity of corn.§ The work was then executed as we see it to-day.‖

About the same time some very important and difficult works of repair were executed in the choir. The first pier beyond the crossing on the north side (19*a*) threatened ruin, and in 1497 it was rebuilt, together with the *doubleaux* and vaults which it supported. In 1503 similar but less important works were carried out to the next two piers (21*a*, 23*a*). These repairs followed a report, dated 26th April, 1503, by Pierre Tarisel and other experts, including the master-masons of Corbie and Saint-Riquier.¶ Indications of these repairs are

* G. Durand, *Monographie*, i. 61, 62.

† "Primes, les quatre pillers princhipaux de la croisie de ladite église sont ploiés et archonés d'un costé et d'autre par les bouttures des premières vaultes, et meismes les pans de murs auprès d'iceulx pillers sont rompus et ouvers à cause desdites bouttures, et pareillement lesdits pans de murs sont rompus vers les grands porteaux de la nef de ladite croisure d'icelle église à pareille hauteur," &c. (*Bibl. d'Amiens*, MS. 563, fol. 226. Communicated by M. Durand.) *Archoner*, courber en arc, faire ployer. *Boutture*, entraînement, impulsion, agitation. (Godefroy, *Dictionnaire de l'ancienne langue française.*)

‡ They can be seen in M. Durand's photographs, Plates x. and xi., and fig. 8 (i. 72).

§ G. Durand, *Monographie*, i. 61–63.

‖ The ties are described in detail and illustrated in G. Durand, *Monographie*, i. 205–6.

¶ The report says: "il est besoing et nécessité de réparer les deux pilliers estant au chœur du côté senestre d'icelle église, ensuivant iceluy qui a esté réparé auprès d'iceux deux pilliers, c'est assavoir de arcs doubleaux et ogisves par dedens ledit cœur, pour le soutènement des vautes, et par dehors est nécessité de faire à chacun d'iceux deux pilliers un arc boutant de pareille fachon et forme, comme il a esté fait audit pillier réparé, et pour ce faire, il faut monter et lever le grant hourt, pour réparer lesdits deux pilliers, et pour le soutènement desdites voûtes." (G. Durand, *Monographie*, i. 60.)

Photo. O. Hacquart, Amiens.

FIG. 3.—FLYING BUTTRESSES ON SOUTH SIDE OF CHOIR.

still visible in the building. The flamboyant boss of the vault of the bay 17, 19*a b*, shows that this vault was reconstructed. Above the pier 19*a*, immediately below the triforium string, the three vaulting-shafts are clasped by an iron collar, which is attached by two hooks

to the wall at the back of the triforium.* There can be little doubt that the strengthening of the flying-buttresses of the straight bays of the choir was effected at this time; probably the flying-buttress to the pier 19*a* was dealt with first, in 1497; then those to the piers 21*a* and 23*a* in 1503, followed by those to all the other piers (25*a*, 20*a*, 22*a*, 24*a*, and 26*a*).† The strengthening of the flying-buttresses is described in detail in M. Durand,‡ and is well shown in the photograph here produced (fig. 3). The original construction is shown by the furthest flying-buttress in the photograph, those to the apse remaining unaltered. Unlike the double flying-buttresses of the nave (fig. 2), those of the choir were single, the space between the arch and the coping being filled with pierced tracery. This construction was, as Viollet-le-Duc has explained, too weak for its work, the result being that "les arcs-boutants se soulevèrent." § Pierre Tarisel added, below the arch of each of the original flying-buttresses, another arch of greater radius, in order to strengthen them to resist the thrust of the high vaults.‖ It is for Mr. Goodyear to explain how the partial failure of these flying-buttresses, and the necessity of undertaking the difficult task of strengthening them, can be reconciled with his theory that the deflection from the perpendicular which he notices in the choir are intentional "refinements." The fact that, so far as I can discover, he has never mentioned these works in the choir in any of his publications affords an illustration of his method of neglecting historical evidences which happen to conflict with his theories.

Pierre Tarisel, who was principally responsible for the works referred to above, is described by M. Durand as a capable man, who enjoyed a very great reputation not only in Amiens, but in other places. He was master-mason of the Cathedral from before 1482 to 1503 at least, and probably until his death in 1510. He was master of the masons' works of the King at Amiens from before 1474, and master-mason of the town of Amiens from 1464. In 1475 he was sent for to Noyon to advise on the cathedral there, which threatened ruin in certain parts.¶ In 1477 he was employed by Louis XI. at Arras. In 1493-4 he advised the Chapter of Saint-Omer on the restoration of the tower of their church. In 1499 he appears on a commission for the reconstruction of the Pont Notre Dame at Paris. There is, however, another fact concerning him which is much more important in relation to the question under discussion. The works of the cathedral of Beauvais were being recommenced by the erection of the transept from the designs of Martin Cambiche, who had worked at Sens Cathedral and had commenced the great portal of Troyes Cathedral. Cambiche himself was therefore an architect of considerable experience. The first stone of the south transept of Beauvais was laid on the 21st May, 1500, and the north transept was built between 1510 and 1587. In 1500 the plans of Martin Cambiche were submitted to Pierre Tarisel.** Mr. Goodyear cites Beauvais as a well-defined instance of "widening"; †† he tells us that the widening of the choir is not less than 3 feet, and that the widening in the transepts is more than in the choir.‡‡ So we have this curious fact, that Pierre Tarisel, who had executed at Amiens the costly and difficult work of inserting iron ties all around the cathedral in order to arrest the

* G. Durand, *Monographie*, i. 61. The collar can be seen in the photograph, fig. 8 (i. 72).

† *Ibid.* i. 61. ‡ *Ibid.* i. 288, and Plates xix. and xx.

§ *Dictionnaire*, i. 72, and fig. 62.

‖ Several of these flying buttresses were more or less restored during the nineteenth century. (G. Durand, *Monographie*, i. 288.)

¶ Mr. Goodyear describes Noyon Cathedral as the most important building, so far observed in France, for proof that vertical curves were employed for their own sake and without reference to a widening (*Memoirs*, i. No. 4, 62). He does not, however, mention the following facts. All the vaults of the nave were reconstructed after the fire of 1293. The vaults of the transepts were reconstructed during the fourteenth and fifteenth centuries. The crossing vault fell in 1462, and was rebuilt. The works on which Pierre Tarisel advised were the reconstruction (*en sous-œuvre*) of four piers of the choir which had failed (two on each side of the straight part), and the restoration of the flying-buttresses of the nave. (E. Lefèvre-Pontalis in the *Guide du Congrès de Beauvais*, 1905; Société française d'archéologie.)

** G. Durand, *Monographie*, i. 59, and *note* 3.

†† *Architectural Record*, xvi. 441.

‡‡ *Memoirs*, i. No. 4, 60. In the *Catalogue*, 125, Mr. Goodyear says that the divergence is not less than 3 feet in the transepts, and less in the choir.

movement in the crossing piers and prevent their developing further "refinements," who had also underpinned one of the piers of the choir, and strengthened its flying-buttresses in order to prevent the development of the "vertical curves" caused by insufficient abutment of the thrust of the vaults, was the expert called in to advise on the plans of the transept at Beauvais, which its architect, according to Mr. Goodyear, actually built with a widening even more pronounced than that which his adviser had been doing his best to arrest at Amiens.*

M. Durand thinks that the works described above formed part of a general restoration of the cathedral of Amiens, commenced in the course of the fifteenth century, and completed about 1525 or 1526.† He gives details of many subsequent repairs, of which the most important were perhaps those of 1627,‡ and of 1761-2.§ We may pass on, however, to the more significant records of the early part of the nineteenth century.

A hurricane of 1800, which did some damage to the Cathedral, and especially to the *flèche*, was supposed to have caused a settlement of the vault over the crossing, and of the north-east crossing pier (17*a*), though, as M. Durand remarks, this settlement was probably of much older standing. The more pressing repairs were carried out by the builder, Bruno Vasseur, from 1804 to 1806. "This man, daring and full of zeal for the preservation of the edifice, having noticed that 24 feet of arch under the vault of the crossing had dropped three inches and threatened to fall,‖ had the courage to stop the progress of the mischief by securing them with four iron collars." ¶ Mr. Goodyear appears to think that the movement here described was a settlement of the entire vault over the crossing, causing the crown to drop 3 inches, which he speaks of as the extreme amount of depression which has occurred in the nave (*sic*) vaulting at Amiens.** This does not seem to me to be a correct interpretation either of the text quoted above, or of the evidence of the repairs afforded by the vault itself in its present condition. I believe that what had actually happened was that certain voussoirs of the ribs of the vault had dropped to a sufficient extent to show a break of 3 inches between them and the adjoining voussoirs which had not so dropped. This opinion is confirmed by the arrangement of the collars shown in the accompanying plan of the vault of the crossing (fig. 4), which is further illustrated by a photograph (fig. 5) which I have had specially taken for this paper. There are six of these iron collars in all. Four of them are around the ridge ribs (EF and HI) between the western and eastern crossing arches and the bosses nearest to them, at J, K, L, and M. To the soffit of the rib between the two collars J and K, and between L and M, are fixed stars cut out of sheet iron (one on each rib), which appear to date from this repair. Bruno Vasseur has also written his name along the rib FG. The other two collars are at N, O, around the south-eastern diagonal rib AG. All these collars appear to be attached to the timbers which form the base of the *flèche* over the crossing. There are several cracks in the panels of the vault, the principal of which †† are approximately shown by the dotted lines on the plan (fig. 4).

In 1805 Sambucy, *ingénieur des ponts et chaussées*, reported on the condition of the Cathedral. He was dismayed at the frightful dilapidations which he had noticed. Many

* The choir of Beauvais was commenced in 1247. It was scarcely finished when its vaulting failed, and was reconstructed in 1272. In 1284 a great part of the vaulting fell a second time; the works of repair lasted forty years, and included the doubling of the number of bays by the addition of intermediate piers. After the erection of the transept in the earlier part of the sixteenth century a tower was erected over the crossing, which fell in 1573. It would only be matter for surprise, therefore, if deviations from the vertical were not to be found both in choir and transept.

† G. Durand, *Monographie*, i. 63.

‡ *Ibid.* i. 77.

§ *Ibid.* i. 85.

‖ ". . . que vingt-quatre pieds d'arche sous la voûte du grand clocher s'étaient surbaissés de 8 centimètres (3 pouces) et menaçaient une chute prochaine . . ." (*Ibid.* i. 155.)

¶ "Colliers de fer," *i.e.* iron *collars*, or straps, not *cramps*, as Mr. Goodyear calls them. (*Architectural Record*, xvi. 462.)

** *Architectural Record*, xvi. 462.

†† These can be plainly distinguished in the photograph from which fig. 5 is reproduced.

pillars were separated from the vaults, threatening immediate danger; much of the leadwork required renewal, and the roof-coverings also needed renewal in many places. In the least storm the Cathedral was flooded (*inondée*) by the water which leaked through the roof, and found its way through the numerous openings which existed in the vaulting.* It was in this year (1805) that the works of repair were seriously commenced. Grandclas, the *ingénieur en chef des ponts et chaussées* of the department, was instructed by the prefect to examine minutely the Cathedral, and to report on the principal repairs required. In this report (28th October, 1805) he speaks of "a movement of the walls of the nave, within and without, so that in several bays the vaults are separated from the walls in such a disturbing manner that in many places it is possible to put the hand between the *ogive* and the wall; cracks are visible in the walls, arches are dislocated, stones broken, &c." He described the movement as only partial and recent, and he attributed it to the neglect of the Cathedral during the Revolutionary period, and to hurricanes, especially that of 1800. He considered that the movement was going on, though only slowly, and in order to stop it he proposed to insert tie-rods across the nave above the vaults. M. Durand remarks that this part of Grandclas's report seems exaggerated, and that the movement which he had noticed was of very old standing.† Possibly the engineer may have intentionally somewhat exaggerated the mischief to obtain the necessary funds; indeed he found it necessary to write a letter to reassure those who feared that the Cathedral was in danger of falling (1806). However, the works which he recommended were carried out, and six strong iron ties, which still exist, were inserted, three over the choir, and three over the nave, in the bays nearest to the crossing.‡ Moreover, in spite of the large sums of money expended in repairs during the first half of the nineteenth century, to say nothing of the restoration under Viollet-le-Duc between 1849 and 1874,§ the structure still shows some indications of the dilapidations described by Sambucy and Grandclas. Numerous cracks can still be seen in all the vaulting, of the nave, choir, transept, and aisles. Many of the flying-buttresses were restored during the course of the nineteenth century. One of the lintels over the columns under the flying-buttresses of the choir bears the date 1838.‖ In the nave some of the lintels A (fig. 2) are broken,¶ which, of course, could not have happened if there had been no movement in the structure.

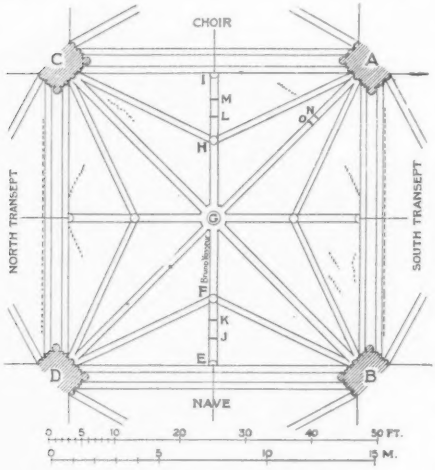
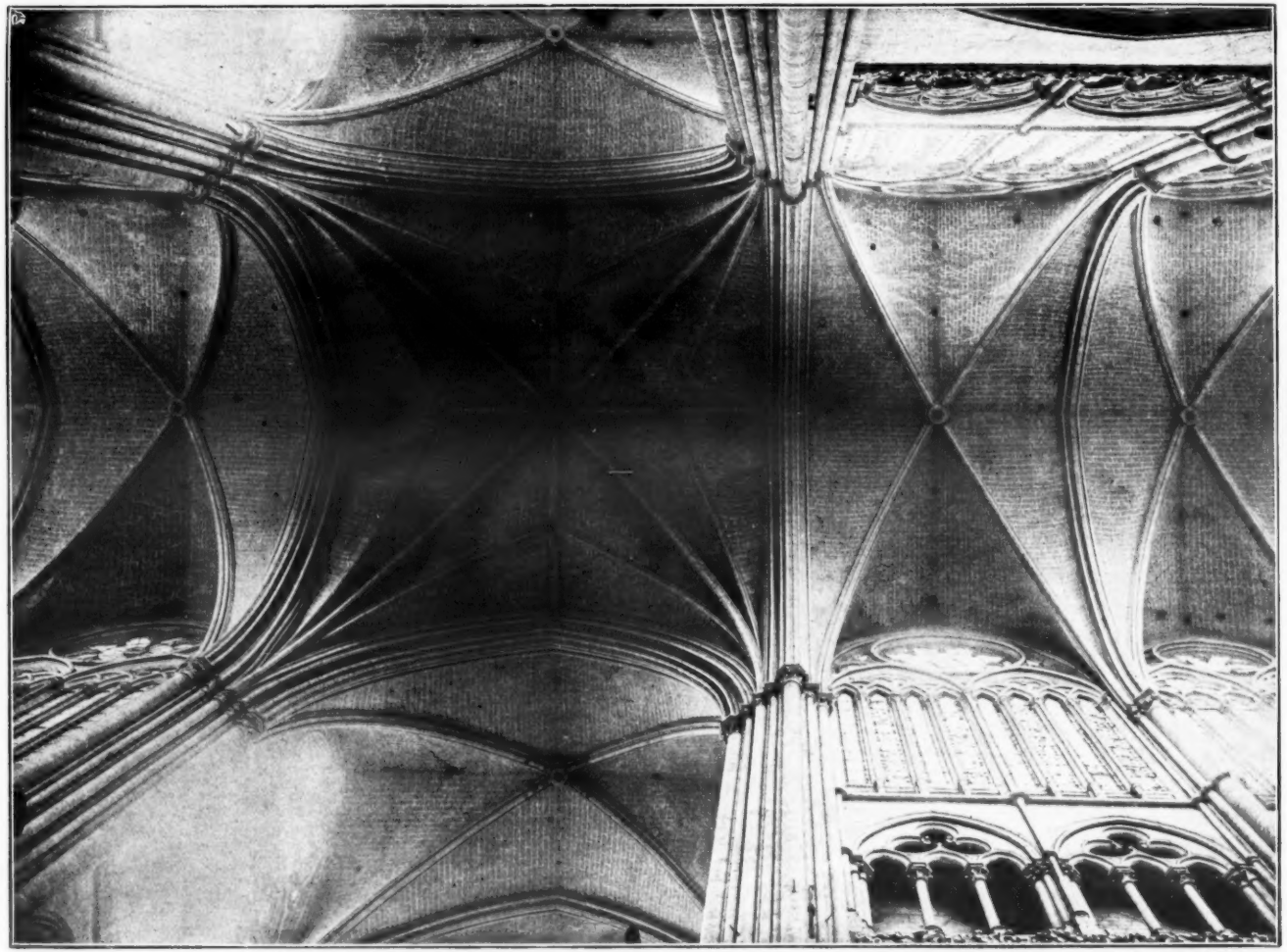


FIG. 4.—PLAN OF VAULT OF CROSSING.

These historical evidences are amply sufficient to demonstrate the nature of the movements which have taken place in the building; and there is nothing in these movements which need surprise anyone who has studied the problems of mediæval construction, so admirably analysed by Viollet-le-Duc in the article "Construction" in his *Dictionnaire*.** Let us now see what evidence is afforded by the present condition of the building as to the precise character and extent of these movements.

* G. Durand, *Monographie*, i. 158. *note* 8.
† *Ibid.* i. 159, and *note* 4.
‡ *Ibid.* i. 160.
§ The restorations carried out between 1850 and 1877 cost about £76,000. (*Ibid.* i. 191.)
‖ *Ibid.* i. 171, *note* 5.
¶ *Ibid.* i. 222, *note* 1.
** *Dictionnaire*, vol. iv. See especially pp. 55, 56, and 65.

CHOIR



SOUTH TRANSEPT

NORTH TRANSEPT

NAVE

Photo. O. Hacquart, Amiens.

FIG. 5.—VAULT OF CROSSING.

To begin with the crossing piers, which in a church of such dimensions are the most delicate parts of its structure. As M. Durand well says—"In order to support the vault of the crossing, it was a question of carrying up to a height of more than 33 mètres, without being able to stay them, piers solid enough to resist the united thrusts of the longitudinal arches of the nave and transept, without giving them a bulk which would unduly obstruct the centre of the building, and without destroying the lightness of its lines. This was evidently the weak point of the system, and consequently it became necessary at the end of two and a half centuries to secure these piers by strong iron ties, which have been, and will long be, sufficient to avoid any danger." * These piers, which are 109 feet in height from the floor to the top of their capitals, are composed of sixteen attached shafts, forming on plan a square of 7 feet 6 inches, placed diagonally, and, as the walls are almost entirely suppressed, the piers preserve much the same bulk for their whole height. At a height of 48 feet above the floor spring the arches of the great arcades and the aisle vaults, and here the piers are subjected to powerful thrusts which tend to cause them to buckle inwards in the manner so graphically described by the experts of 1498. More than 60 feet higher they have to withstand the thrusts of the vault over the crossing (about 45 feet square) and of the adjoining high vaults, which tend to push the piers outward, and so produce those "widening curves" which Mr. Goodyear believes to be the result of intentional construction.

What is the extent of this "widening" of the crossing piers? In the Edinburgh *Catalogue*, Mr. Goodyear says: "The total divergence at Amiens has been plumbed, and is about 2·80 (feet), or 34 inches, throughout the nave and choir." † He tells us elsewhere how this plumbing was taken. A plumb-line was dropped through an opening in the vaulting near the south-west pier of the crossing (16*a*), and by sighting on this plumb-line this pier was found to bend into the nave about 0·20 foot, and then to curve outward about 1·40 feet. "The total divergence would thus be about 2·80 feet." ‡

We are fortunately in a position to test the accuracy of these observations. M. Durand has found in the office of the Cathedral works a drawing of the southern arch of the crossing (16*a*, 18*a*), made during the time that Viollet-le-Duc was in charge of the Cathedral, at some time between 1850 and 1870. The drawing is to the very large scale of 5 cm. per mètre (one-twentieth actual size), and the piers are therefore represented on the drawing by a height of more than 5 feet. M. Durand informs me that the drawing is executed with a care and precision in which he has every reason to place the greatest confidence. On this drawing the extent of the movement of the two southern piers of the crossing (16*a* and 18*a*) is indicated by ordinates (shown by red lines) from perpendicular lines (also in red) on two faces of each pier. The lengths of the ordinates are figured on the drawing in all cases, and it is fair to presume that they were plotted from actual plumbings. Thanks to the kindness of the *architecte-inspecteur* of the Cathedral, I have obtained a tracing of this drawing, but as the divergences from the vertical would be imperceptible if it were reduced to any size practicable in these pages, I have redrawn the profiles of the piers to a horizontal scale of ten times the vertical scale (fig. 6). The ordinates and heights figured in decimals of a mètre are reproductions of the figured dimensions on the original drawing. The extreme divergence from the vertical, that of the northern face of the south-east pier (18*a*), is 0·125 mètre, or 5 inches, against Mr. Goodyear's estimated plumbing of 17 inches. I would venture to suggest that, in any future publications of his investigations, Mr. Goodyear should clearly distinguish between actually measured plumbings and plumbings only estimated by sighting, for it is evident that,

* G. Durand, *Monographie*, i. 225.
† *Catalogue*, 119.
‡ *Memoirs*, i. No. 4, 26; *Architectural Record*, xvi. 450; *Catalogue*, 121.

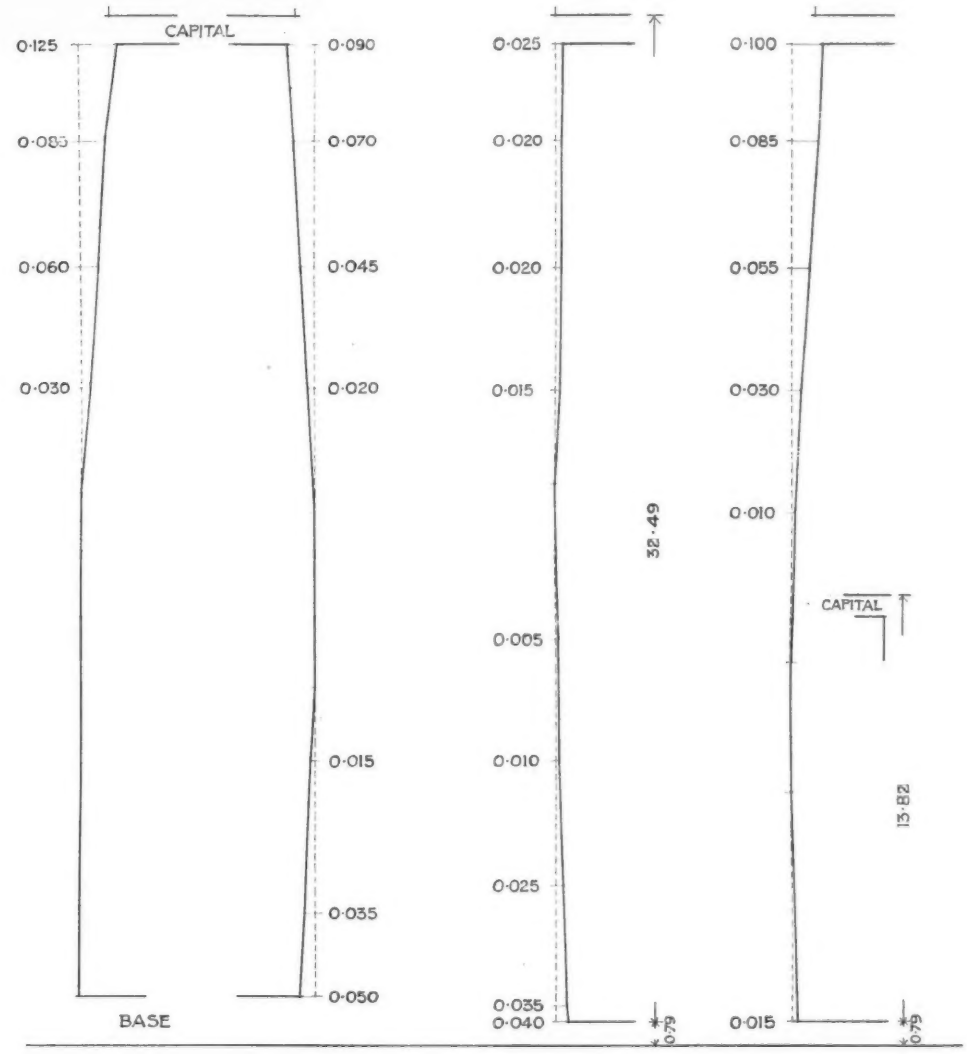


FIG. 6.—PROFILES OF SOUTHERN PIERS OF CROSSING.

in considering the latter, we must allow for a "margin of error" considerably in excess of that which he has noted in mediæval cathedrals.

Let us consider a little more closely the divergences from the vertical shown on this drawing. The northern face of the south-east pier (18*a*) rises vertically to about the level of the apex of the great arcades, and from this level upward it has been thrust outward by the high vaults to the extent of 5 inches. The western face of this pier has been thrust inward by the choir arcade and aisle vault to the extent of 2 inches; above it recedes to the extent of $3\frac{1}{2}$ inches, its face at the capital being thus $1\frac{1}{2}$ inches behind its face at the base. The eastern face of the south-west pier (16*a*) has been thrust inward by the nave arcade and aisle vault to the extent of $1\frac{1}{2}$ inches; above it recedes to the extent of 1 inch, its face at the capital being thus slightly in front of its face at the base. The northern face of this pier has been thrust inward very slightly (about $\frac{1}{2}$ inch), and above it recedes to the extent of 4 inches,* so that its face at the capital is about $3\frac{1}{2}$ inches behind its face at the base.

If any architect who reads the above should still entertain any doubt as to these deflections being the result of accident and not of design, I think that his doubt might be removed if he were to make himself a large-scale drawing from the ordinates figured on fig. 6. The profiles of the piers cannot properly be described as "curves" at all; rather, they are broken lines which are the perfectly natural result of the movements which have caused them. This remark is equally true of the deflection of the piers in the choir of Westminster, which is indicated by a dozen ordinates figured on Mr. Sydney Vacher's fine drawing.† In this particular instance the aisle vault has thrust the pier inward to the extent of 2 inches; above it recedes to the extent of 6 inches, giving a net divergence from the vertical of 4 inches in a height of about 76 feet from floor to capital of vaulting-shaft. The divergence here is therefore a little greater in proportion to the height than the extreme divergence of the southern piers of the crossing at Amiens, as figured on the drawing.

From the figures given above, it will be noticed that the divergence from the vertical in the southern piers of the crossing at Amiens is greatest towards the south; 5 inches in the south-eastern pier, and $3\frac{1}{2}$ inches in the south-western pier. In connection with this southward movement, it is important to observe that the high vault of the south transept has parted from the southern arch of the crossing, a fact which is proved by the existence of pronounced cracks in the vault-filling, next the southern side of the crossing arch. This is true also of the north transept.‡ This separation of the transept vaults from the crossing arches proves that the whole upper part of the north transept has moved toward the north, and of the south transept toward the south. This parting does not exist between the choir vault and the eastern arch, nor between the nave vault and the western arch, and the ordinates figured on the drawing show that the deflection of the two piers eastward and westward respectively is only very slight.

The movement in the crossing piers and in the transepts, which is thus proved beyond the possibility of dispute, is quite sufficient to account for the "refinements," which Mr. Goodyear has observed in the transepts.§ There is no necessity, therefore, to discuss

* Although I am not inclined to place much reliance on photographs in a question of this kind, it is perhaps worth remark that the divergence calculated from the excellent photograph reproduced in M. Durand's Plate ix. agrees very closely with this measurement from the drawing.

† *Architectural Association Sketch Book*, new series, vol. xi. (1891), plate 18. Second bay, north side of choir, east of crossing.

‡ These cracks are indicated by dotted lines on fig. 4, and they are distinctly visible in the photograph from which fig. 5 is reproduced.

§ This movement also accounts for the "parallel leans" (*i.e.* leans in the direction of the length of the wall) of the triforium shafts, which Mr. Goodyear says "are carried out in a rather half-hearted manner," and are, quite naturally, "confined to the triforium bays which adjoin the great piers." (*Architectural Record*, xvi. 455.)

these in detail, but there are two points which must be noticed: the supposed tapering of the piers, and the so-called leaning mullion. In connection with the "widening refinements" in the transept arcades next the crossing (which are simply the result of the movements described above—movements which are more pronounced in the transepts than in any other part of the church), Mr. Goodyear states that the four piers of the transepts which adjoin the crossing (15*b*, 16*b*, 17*b*, 18*b*) have an outward lean on one side of the pier, and are closely perpendicular on the other side of the pier; "these piers are consequently tapered about 0·30 (feet)."* If this tapering of the piers could be established, it would certainly lend some apparent support to Mr. Goodyear's theories. The great height of these piers renders it impossible to measure them at the top without scaffolding, but I have had the circumference of one pier (15*b*) measured at its base, and again midway in height between the base and the capital. The measurements were taken very carefully with a steel tape, and at both heights the girths are precisely 6·25m. The pier, therefore, *does not taper*. This is probably another instance of Mr. Goodyear being misled by "sighting" plumb-lines; but it is sufficient to raise a doubt as to the accuracy of other observations obtained in this manner. Of the leaning mullion of the window 13*a b* † (if it really does lean), it is only necessary to remark that leaning mullions are by no means uncommon next crossings or central towers, or in other positions where thrusts or unequal loading have caused settlements. The leaning mullion at Amiens is only "sympathetic" (to use Mr. Goodyear's phrase) with the leans in the piers in the sense that both are due to the same movement in the structure.

The "widening" of the nave of Amiens is stated by Mr. Goodyear to be 33 or 34 inches, but as this estimate is based on his "sighted" plumbing of the crossing piers, it need not detain us further. It is probable that some movements corresponding with those of the crossing piers have taken place in the nave, caused by the thrust of the aisle vaults inward, and by the thrust of the high vault outward, but the divergences are so small that they are not appreciable to the eye, and whatever may be their precise extent they are certainly not greater, and most probably are much less, than those of the crossing piers. That some movement has occurred in the nave is proved by the breaking of the lintels A (fig. 2) mentioned above, by cracks in the enclosing wall at the back of the triforium,‡ and by cracks in the vaulting of the nave and aisles. Movement in the choir is conclusively proved by the historical evidences quoted above. Mr. Goodyear gives a series of actual plumbings in the triforium of the nave and choir,§ which show that the thin enclosing wall at the back of the triforium and the piers of the triforium on the north side lean outward to the north, and on the south side lean outward to the south, which is precisely what we should expect on structural grounds. The extent of the lean, in a plumb-line 15 feet high, varies, in the choir, from half an inch to about 2½ inches in the wall (averaging less than 1½ inches), and from three-quarters of an inch to 3 inches in the piers (averaging about 1¾ inches). In the nave it varies from three-quarters of an inch to 3 inches in the wall (averaging less than 1½ inches), and from 1¼ inches to 3 inches in the piers (averaging slightly less than 2 inches). A glance at the section (fig. 2) will be sufficient to show that it would be very unsafe to make any proportionate calculation from these figures to arrive at the total divergence. Mr. Goodyear considers that the well-defined leans in the triforium wall at the crossing piers against the entire depth of the transept walls are highly important,‖ but they are sufficiently explained by the character of the movements in the transepts described above.

Mr. Goodyear tells us that "it is a very frequent arrangement in French cathedrals that

* *Architectural Record*, xvi. 452. Mr. Goodyear also suggests that other piers in the choir aisles taper.

† *Memoirs*, i. No. 4, 33, 34; *Architectural Record*, xvi. 453, 454.

‡ These are found also in the choir and transept.

§ *Catalogue*, 123.

‖ *Catalogue*, 124.

the widening is inconspicuous or wholly absent at the façade entrance," * and of Amiens he says that the divergences "appear to be uniform and parallel through the choir and nave, with the exception that the great piers at the entrance next the organ gallery (1*a*, 2*a*) do not diverge, and that those next them diverge less than the rest." † Truly an exception very damaging to his theories. The reason why the piers 1*a* and 2*a* do not diverge will be obvious from fig. 7 (plan of each end of the nave at the triforium level), by a comparison of the abutment of the crossing piers and nave piers with the abutment afforded at the west end, where the thrust of the high vault is neutralised by the whole weight of the western towers. On Mr. Goodyear's hypothesis, the exception is inexplicable. If these "widening refinements" were really regarded "as the necessary conditions to the creation of a work of art in

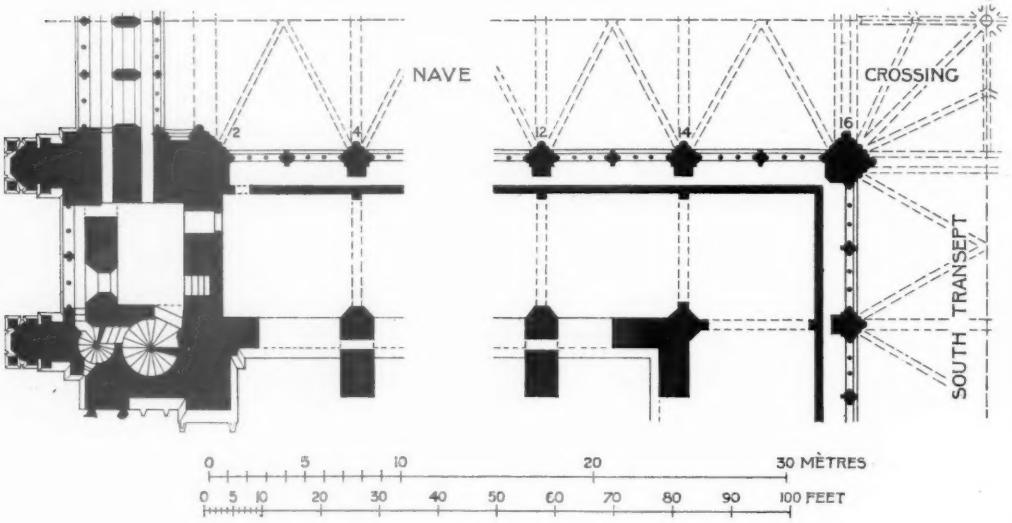


FIG. 7.—HALF PLAN OF EACH END OF NAVE AT TRIFORIUM LEVEL.

architecture," surely they were just as essential in the piers which closed the view westward as in the piers which bounded the eastward view across the transept, and even more essential there, at the west end, than in the intermediate piers of the nave where they are hardly perceptible. So also, when Mr. Goodyear tells us that of all the vaulting-shafts in the aisles of the nave eleven out of fourteen lean outward,‡ how is it that two of those which do not lean happen to be the shafts at the angles of the transepts, which close the view down the aisle eastward, precisely where such "refinements" would tell most?

To sum up. The deviations from the normal in Amiens Cathedral which Mr. Goodyear believes to be intentionally constructed "refinements" are nothing of the kind; they are merely the accidental results of movements which have taken place in the structure, of which movements conclusive proof is afforded both by the recorded history and by the present condition of the building. These movements are very small considering the huge dimensions and the lightness in the design of the structure; much smaller indeed than Mr. Goodyear

* *Architectural Record*, xvi. 139; *Memoirs*, i. No. 4, 24.

† *Architectural Record*, xvi. 450.

‡ *Catalogue*, 124–5.

would have us believe. The only surprising point about them is that they are not very much greater than we find them to be.

As Mr. Goodyear has quoted, in support of his theories, the views (not always at first hand) of architects and clergy connected with some of the French churches which he has investigated,* it may be well to see how these theories of his have been received in France by those most competent to pronounce an opinion upon them. As may be inferred from what I have said above, M. Durand entirely rejects Mr. Goodyear's theories with regard to Amiens. M. de Lasteyrie, whose authority on any question connected with the archæology of French mediæval architecture ranks as high as that of anyone in France, has rejected Mr. Goodyear's theories in no uncertain manner.† M. Eugène Lefèvre-Pontalis, the *directeur* of the *Société française d'archéologie*, in a review of *Memoirs*, i. No. 4, says that Mr. Goodyear endeavours in vain to discover what he (M. Lefèvre-Pontalis) would call the law of horizontal inflection, and that the great variety of his observations proves indeed that it exists chiefly in his imagination. M. Lefèvre-Pontalis declines to accept his theories with regard to vertical deviations, and concludes by saying—"It seems to me that he sets out with an erroneous idea, and that he wishes to attribute to the architects of the middle ages principles which they had no interest in adopting from the point of view either of perspective or equilibrium." ‡

I cannot conclude without acknowledging my special indebtedness to M. Durand, both as regards his masterly *Monographie*, and also for the supplementary information which he has so kindly given me. When the other French churches investigated by Mr. Goodyear have been the subject of monographs as exhaustive as that of M. Durand on Amiens, there will be no difficulty in producing equally conclusive proof that their "refinements" exist only in Mr. Goodyear s imagination.

* Mr. Goodyear quotes the *Suisse* and *Bedeau* at Amiens in evidence of what he calls "the tradition at Amiens" (*Catalogue*, 121), which goes back some forty years. As evidence of tradition, the opinion of the experts of 1498 is more to the point. From his conversations with the *Suisse* and *Bedeau*, Mr. Goodyear has evolved a curious theory which he calls "the Amiens explanation of the widening" (*Architectural Record*, xvi. 456), which is to the effect that the batter of the piers was "a device for the promotion of constructive solidity, and in order to throw the thrust of the vaulting directly against the line of resistance which is offered by the flying-buttresses." In other words, with this intention the piers were built out of plumb at an angle of something less than two degrees from the vertical, if we accept Mr. Goodyear's own figures, or of about half a degree if we take the extreme divergence in fig. 6. It was surely unnecessary to devote three pages to reasons for doubting such a theory (*Architectural Record*, xvi. (1904), 456–458), and yet in his *Catalogue* of 1905 (p. 122) Mr. Goodyear says that it "appeals to one of the greatest experts of our day as possibly throwing new light on the constructive practice of the Gothic builders"!

† *La déviation de l'axe des églises*, pp. 289–290.

‡ *Bulletin Monumental*, lxix. 371–375.

MONDAY, 11TH JUNE 1906.

ADJOURNED DISCUSSION ON MR. WATERHOUSE'S PAPER: "SOME OBSERVATIONS ON THE REPORT OF THE ROYAL COMMISSION ON LONDON TRAFFIC, WITH SPECIAL REFERENCE TO THE PROPOSED FORMATION OF NEW THOROUGHFARES" [JOURNAL, 26TH MAY 1906].

Sir JOHN TAYLOR, K.C.B., *Vice-President*, in the Chair.

Professor BERESFORD PITE [*F.*], who had moved the adjournment of the debate at the last meeting, and who was now called upon by the Chairman, referred in his opening remarks to Mr. Waterhouse's Paper as perhaps the most important Paper to Londoners read at the Institute for many years; he advocated for it cool and full consideration and careful thought, as the important question of new thoroughfares in London was primarily a matter for architects. Continuing, he said: It certainly is a matter for architects before a matter for engineers. I think there is a great deal of force in what Mr. Waterhouse said in his Paper, that the scheme of the London Traffic Commission is primarily a tramway scheme which has attracted the attention of engineers, and has been dealt with in an engineer's manner: though I venture to suggest it is primarily a matter of buildings, and not merely a matter of through traffic, but of getting access to and from important buildings; and so long as the buildings of London, as we hope will be the case, are architectural, this is a question which primarily concerns architects. Perhaps it will be wise to deal with the matter very much in the way in which it was presented to us. In general terms I should like again only just to refer to the extraordinary gift which my friend Mr. Waterhouse displayed for bringing honey out of a carcass, and, as Mr. Gotch once remarked here, of providing that suggested flavour of humour in his Paper which corresponds to the influence of onion in salad. I would like to make this suggestion in the first place with regard to the direction of any new roads in London. Mr. Waterhouse has followed the main direction of the roads proposed by the Traffic Commission, and therefore I would like to start with this suggestion, that the configuration of London is practically the configuration of the river and its hills. I think generally it would be useless to attempt to throw a new line of traffic communication through London irrespective of the weight of buildings adjacent to that line. That weight of buildings is practically created for us by the line of the river, and therefore the wide new thoroughfare that will have to tap London must be equidistant, or practically equidistant, from the river. Then we come to the question of hills. Of course there is Ludgate Hill, which is London practically, on which the original London stood, and around which London now seethes at its very heart. Then a little way to the north is Pentonville Hill, with the "Angel" on it, and there is the general slope going westwards that lies between Oxford Street, Piccadilly, and the river. The southern side of London is practically flat. I think the general diversion which is now suggested by a great eastern and western road entirely neglects this configuration of London which is created by the river, and that of the hills. It seems to scoot up Pentonville Hill as if it did not exist, or as if the traffic were longing to get up it. Then the southern road in the same way practically bumps over the angle at the bottom of Pentonville Hill. Taking up the roads as Mr. Waterhouse discussed them, the great west-to-east road, we notice that it terminates practically on the side of the Park. There is no logic in taking a huge thoroughfare to receive the greater part of London's traffic and directing it in an unbroken stream upon the edge of the railings at Lancaster Gate. I cannot conceive the reason for the termination of the western thoroughfare there, any more than I can understand its direction. When I say Lancaster Gate, of course I mean Lancaster Gate in Bayswater phraseology, and Victoria Gate in park phraseology. The only possible direction suggested by that line seems to be immersion in the water of Kensington Gardens, which you see exactly contiguous with the line of the road. Surely any western road ought to lead to some focussing point. If it were led to the Marble Arch it would receive relief in various directions; but ending as it does near the foot of Queen's Road, it seems practically futile in purpose. The Bayswater Road for a considerable length (at least for a mile) does exactly the work that is proposed to be done by this new west-to-east road. Then I should like to say, with regard to its general direction, that it disregards the general tendency of all east-to-west roads on the north side of the river. If you watch them, they all converge on to the City; that is to say,

they all have a practically due easterly direction or a south-easterly direction; and I cannot imagine what section of the population will wish to hurry at electric-tramway speed in a north-easterly direction away from Oxford Street, away from the delights of the shops, and right away from the City up to some point somewhere near St. Luke's. It seems to me that the direction of the road is contrary to the tendency of traffic in London. Eastwards, I think the same truth also applies. My proposition with regard to the configuration of the river would appear to have had some bearing upon the eastern direction of that great transverse road, but the eastern roads in London have a tendency northwards from the Bank. The roads all tend due east to the Bank from the west; but when you get to the Bank you find that they take a tendency northwards, which is probably owing to the existence of the docks. This east-to-west road, singularly enough, at that point turns down, which also has the effect of drawing traffic from the East End instead of into the City, and instead of where everyone wants to go—away in the direction of Old Street and St. Luke's. On these accounts it seems to me that that great thoroughfare is open to criticism. In the same way the north-to-south thoroughfare is not satisfactory, because it neglects the tendency to the City—towards the heart. It creates a wide road by the side of the great enclosure created by the railways to the north, and does nothing, and can do nothing, to receive and to relieve the north-western accesses to London. It is unfortunate, of course, from the point of view of the plan that the railways stand as they do, forming a great wedge driven into London from the north and preventing direct access from the north-west into the centre, and this great northern road does nothing but emphasise the existing difficulty. It creates an expensive and costly thoroughfare within easy reach of the Great Northern line all the way up to the north. Then when we come to the south, it in the same way avoids the centre, and everyone who goes down that road and wishes to reach the Bank, or the heart of London, will have to leave the road to itself and turn into some of the already existing thoroughfares. Generally, the western district of London at present is provided with an ample number of connecting thoroughfares. If you take Oxford Street, the great western outlet of London, you will find there are parallel streets which relieve it to the north in very considerable quantity, streets such as Wigmore Street, and streets like the great Euston Road, the great new road of the beginning of last century, and a road which I might remind the Meeting was created by Act of Parliament to be no less than 160 feet between buildings. The road is laid down as being 60 feet wide, and the buildings are to be kept 50 feet from the edge of the road by the New Road Act, and it is a fact which has been pointed out in Minutes published by the London County Council that when the portico of Marylebone Church was erected it was found to be without the legal limit of 50 feet, and a special Act of Parliament was obtained to sanction the retention of that portico. London had gone to sleep during the last century, and allowed buildings right and left to infringe upon that most valuable building line; and the consequence is that we now find the great east-to-west thoroughfare blocked by leasehold premises, which it is hoped will not be renewed, so that we may some day come into the reversion of this east-to-west thoroughfare already existing, though partially blocked. To the south of Oxford Street there is not, of course, the same facility of movement from east to west, the streets being narrow and confined. The traffic to the north-west of course goes on the north side of Hyde Park, and the traffic to the south-west follows the Piccadilly line and passes under Hyde Park, so that it will be obvious that any improvement of means of access to London should follow the existing tendencies, and should rather take a similar direction to the great Oxford Street line on the north, or the great Piccadilly line on the south. Of course this scheme of the Commission is very large and drastic It is too large to be practicable, and too drastic to be popular and to be carried out. We can only imagine such a scheme being carried out by the formation of a Trust to acquire a vast amount of property and to hold it for the benefit of the public, and such a Trust one can scarcely think will ever be able to be called into being. Mr. Waterhouse proceeded with a light airiness of humour which made his Paper so delightful to hear, and put the Hotel Russell under sentence of death; and if you look at the plan you will find he has been absolutely impartial, because the Langham has gone in a similar way; and his architectural humour has led him to suggest that a circle should be driven round the awkward back elevation of All Souls' Church on account of its clever portico. Then, Sir, generally I should like to suggest that, as London contains a very large number of exceedingly beautiful buildings, if we had a chance of really clearing a space and taking buildings that we have in London, and grouping them as we fancy we should like to see them, there would be no capital in Europe that could compete with London. If we take, for instance, that group of Greek buildings which we have around Bloomsbury—the British Museum, St. Pancras Church, the entrance to Euston Station, and University College—and group them together, what a magnificent class of buildings they are! Then in the same way, if you take the earlier buildings, the great city halls and such buildings as Whitehall and the Horse Guards, and so forth, and group those together a little more closely, how charming they would be! Then if we take the

wonderful series of modern Gothic churches and put those in a row or in a park, how nice they would be! I really should like to get all the Gothic reredoses of the last half-century and stack them in the South Kensington Museum in order to give the public something to look at, and to give our architects a chance of repenting of their many sins. If we only had a chance of rearranging things, what a fine city we could make of London!—for the proper method of improving London is by improving the access between our buildings and opening up the buildings that we have. It is a singular thing that the line of Waterloo Bridge if produced will come into the centre of the front of the British Museum, and if we could strike a few lines of that sort right to our fine buildings and open up accesses between them, we should be doing something that is more practical, something that would be more easily attained, and something, I venture to think, which would be more satisfactory to us as architects than the mere driving of a huge new thoroughfare, with its very doubtful blessing of miscellaneous architecture which none of us can escape from, right through the heart of the London that we know and love so well. With regard to the configuration of the river, I should like for a moment to point out that the river is a great S. The upper curve has St. Paul's sitting above it on Ludgate Hill, and has for its centre Bethlehem Hospital at the south. The traffic routes of London have practically adopted that line because they concentrate across the river *via* Blackfriars Bridge and Waterloo Bridge upon the Elephant. Then the lower curve of the S has Westminster upon its shore in the centre; and at its true centre, from which it radiates, is Hyde Park Corner. That is really the shape of London, with St. Paul's at one centre and Westminster at the other, with lines rotating from St. Paul's and going northwards above Hyde Park, and the other lines from Westminster going southwards under Hyde Park. If you once recognise that configuration, I think it will help us to link our architectural buildings together. One other point, probably the most important point, because the most practical of all. Is it possible for us to have an authority in London which will study traditions, which will regard perpetually a continuation of architectural lines, and which will consistently harmonise our street widths and street improvements so as to give us the most competent relief when it can be obtained most economically, and when it is most needed? We all desire such a body as that, and I venture to think—and am glad to say it, quite prepared for criticisms which may be deserved, and probably are well deserved—that we have that body in the London County Council. I cannot help thinking that a body sitting with a permanent architectural staff, with permanent supervision of buildings, with statutory powers with regard to the making of new roads, and with a certain control over existing roads, is the body which ought to be strengthened, and which ought to be supported towards the attainment of architectural ends which London most desires. I am quite sure that the improvement of the London County Council is a very necessary and a very important line of policy, and I should like to suggest to the Institute that the improvement of the London County Council as regards architectural matters is in our own hands; and if we were to take a wise line of public action with regard to the London County Council in public improvements, and seek to assist them in architectural matters in promoting their new legislation, we should be able to do in that way much more good than by merely maintaining a critical attitude with regard to action on problems which do not of necessity concern us as architects. I would like to point out to the Institute that only last year the London County Council introduced a Bill, the greater part of which was withdrawn, which practically gave them power to make streets up to 100 feet in width and to link together streets that wanted linking together, and to open up blind ends, so that in a variety of ways at small expense would begin to come that relief to the traffic which in the first place is necessary. On the other hand, I would venture to warn the Institute against calling into existence a new body without architectural traditions, to which we shall have no means of effectually appealing, which will drive huge large thoroughfares right through the heart of London in defiance of local interests and in defiance of any architectural interests. I cannot help thinking that we should foster steady education in the matter of public architectural improvement before we decide to call into existence another body to drive new streets through the heart of London in that way. I suggest that we, as architects, are not yet in a fit frame of mind and intellect to design buildings for such streets as are now proposed to be made, to say nothing of the designs of such circuses and fine public places as might make Russell Square the wonder of the world. Architectural tradition has moved far away from the point of type which has enabled us to produce Regent Street, or King William Street, or Moorgate Street in the City; but although we are doing our best, we can produce nothing much better than Shaftesbury Avenue, or Kingsway, which is practically the same thing only on a bigger scale. The absence of unity of feeling, the absence of architectural ideals in education, and the absence of real public interest in public architecture are to blame; but in all these respects we are improving. Give us another half-generation, and I think we may be fit for these new streets. I beg very heartily, Sir, to thank Mr. Waterhouse, if I may venture to add something to the vote of thanks which was passed last time for his most interest-

ing Paper, and to hope that public attention may not cease with it, and that our attention to it as an Institute may be concentrated continually upon this most important subject until London is fully alive to the fact that there is a "chiel" looking on and "takin' notes."

Mr. E. W. Hudson [*A.*]: Professor Pite has dealt with the subject from an architect's point of view, but it must, I think, be considered also from an engineering point of view. The question is so important that we may excuse gentlemen who make suggestions even by letters to *The Times* if there is a chance of arousing the lethargy of Londoners by proposals likely to alleviate the present difficulties of traffic. Mr. Waterhouse has dealt very generously with the Royal Commission, but he has given good reason for one strong indictment in suggesting that it evinces "tramway madness."* With this I agree. But the worst sting of Mr. Waterhouse's Paper is in the tail—in the words "uninterested public." There, Sir, is the cause of all the trouble from which we now suffer. Mr. Albert Shaw in his book *Municipal Government in Great Britain* remarks:

> If London within the lifetime of men still in their prime had taken due precautions, what errors might have been avoided! London is now creating a park system, and acquiring land that has quadrupled in value within thirty years. London is widening and straightening streets, and increasing thereby the expense of appropriating frontage that costs twice as much now as it would have cost a few years ago. The people of London suffer an inestimable loss in convenience and actual money through the haphazard nature of passenger-transportation facilities, &c.

A comprehensive plan for London realignment which might be worked from during the next half-century is the first desideratum now, late though it be. Mr. Waterhouse has not given us an alternative scheme, but has confined himself to a revision of the line for the two great avenues, which are only put forward in a very half-hearted, tentative manner in the Report of the Royal Commission. The Commission's scheme, in fact, is only a suggestion, and Mr. Waterhouse has worked it out carefully in detail. I do not think that a great east and west and north and south thoroughfare is what is required, although a great deal of traffic of course goes east and west. We have had very many schemes within the last 150 years, and since Wren and Evelyn planned a reconstructed London. After them came the little known but comprehensive book of John Gwynne (1766), and many of his suggestions have since been carried out. Later on came Sydney Smirke, in 1834, and some of his suggestions have been carried out. Then there were Sir Charles Barry's suggestions for Westminister, which were not carried out; next Colonel Haywood's; and since then, among others, the plans of Mr. H. H. Bridgman, Mr. Woodward (1886),* Mr. Arthur Cawston (1893), and Mr. T. Blashill. I think London needs much more than two new straight thoroughfares, and, after considering the lines of many cities, British and Continental, I think what we require are *elliptical avenues* which will start at the west, pass round as belts, and turn south, so forming links across the bridges, as we find is done in the best laid-out foreign cities. London has not had an opportunity of substituting magnificent boulevards for its walls and defensive ditches, as was the case in many instances on the Continent, and I do not think they could be in any way improved upon. Take, for instance, Vienna, Brussels, Rouen, Milan, and, finest example of all, Paris. The belt system I hold to be *ne plus ultra* for a realignment of London. One such circuit route should give access to all our great railway termini in the Euston Road. Looking at the later cities of the New World and at the new towns in our own colonies, what do we find? They are all laid out in rectangular crossings, and with perhaps one or two diagonal avenues only, as in San Francisco, Chicago, Washington, Philadelphia, &c., but no belt lines whatever. In the avenues in the other cities I have referred to we find also belt lines of railways. What could have been more convenient to us for the past thirty years and more than the much abused Underground Railway, intended originally chiefly for goods traffic? It has been recently copied in Paris, where they have also their *Ceinture* outside, and now the *Métropolitain* is throwing out tendons, loops, and tangential extensions right and left. We have avoided circuits in roadways, and adopted them in a railway. The French adopted them in roads long ago, and now add railways besides, endorsing fully the principle advocated. Four lines of tramways as have been foreshadowed in this report, involving 140-foot roads, are superfluous. We can do without them, even if any double line is required. The motor 'bus will do much for London. It has not had a fair chance. When its noise, smell, and vibration have been rectified (which is surely within the range of engineering skill), tramways will be found a nuisance and an obstruction. Therefore I join issue at the outset with this part of the report. The tramway mania has been caught by the President of the Local Government Board, according to his article in the *Pall Mall Magazine* for June, and he has no other panacea for the difficulties of London traffic than the multiplication all over London of electric trams. In the district he represents—viz. Wandsworth and Battersea—the place is now in a state of upheaval owing to the construction of electric trams: the roads are blocked everywhere, and the trade is suffering. The expense of a general adoption of these tramways is something

* There were Commissioners who dissented.

* *Westgarth Prize Essays.*

terrible to contemplate. Mr. Burns says, "Extinguish omnibuses altogether," dealing another blow at private enterprise. Now, objection has been raised to the "newness" of London which would be caused by building in new streets. Preserve all ancient and good buildings as far as possible; but they were new once, and surely a monumental character can be imparted which will be better than mature buildings of the Gower Street or even Nash's Regent Street type. We have seen the design for the reconstructed end of that street; and although it is stated that the shopkeepers say they will have nothing to do with it, we must admit that it is possible to get designs, providing for a little more adequate display of goods, without supporting upper stories on posts with all plate glass in front. As regards an Advisory Board Mr. Burns says, "It exists already, and its offices are in Spring Gardens." I regret that Professor Pite approves this and fears to have another authority, thinking it would create a "Frankenstein's monster." The Government, representing the British public, has already created one which bids fair to "extinguish" ratepayers as well as omnibuses; and to give this insatiable body further duties while its members are partly occupied with parliamentary duties would but add another hydra-head for absorption of rates (without control) in municipal expenditure. I am glad to see Sir R. M. Beachcroft objects to this idea. I deprecate any scheme that would injure the prospect of the Thames Embankment, as the proposal in the Report for a bridge close to Blackfriars Bridge would certainly do. We have already the Chatham and Dover Railway bridge on one side, and to put another on the other is perfectly unnecessary, and would spoil the finest curved quay which this country possesses. Blackfriars Bridge is to be widened, and Waterloo Bridge, only 44 feet wide, could be and one day must be widened. The addition of a half-bridge each side of Charing Cross railway bridge would relieve the Strand, provide all that is necessary for transpontine traffic, and not add to congestion at the focus of the converging roads on the Surrey side. Mr. Waterhouse suggests that to take two frontages in street-widening would be better than one. I think that is so from an architectural standpoint. Leaving apart the question of architectural grandeur, however, to take two sides is a more expensive way. You have double the number of compensations to arrange and double the frontage to relet, and it seems not so recuperative or easy now to let it with the restrictions we desire to enforce. It must be remembered that Gray's Inn Road has already been widened, and any further widening is hardly likely to be adopted. The fear of trespassing upon the sacred precincts of the Temple has perhaps been carried too far. If King's Bench Walk were thrown open to the Strand and Embankment it would afford fine relief to Fleet Street, and the privacy of the divided precincts could be secured by trees and a connection by subway. I strongly protest against the necessity for any fresh bridge; but if it must be, the line from the Law Courts to Bethlehem Asylum is serviceable, and incidentally suggestive! Mr. Waterhouse would seemingly spare the Duke of Devonshire's property at Berkeley Street, but has not been so kind to the Duke of Bedford at Russell Square. I prefer a line passing in front instead of behind St. Pancras Church, and so by Seymour Street widened on the east side to High Street, Camden Town. The importance of the subject, and its bearing on matters which the Congress is to consider, is my excuse for the length of these remarks.

Mr. Wm. Woodward [*F.*]: I am very sorry I was not able to be present when Mr. Waterhouse read his Paper, but I read it in the Journal. I can quite sympathise with him in the difficulty he must have had in preparing such a Paper, because in 1885 I myself read a Paper on the subject in this room, and I know the difficulties as to the laying-out of streets of this nature. Looking at Mr. Waterhouse's plan I am reminded of my own plans for rebuilding London. Mr. Waterhouse has found, as he considered, the proper route for a new thoroughfare, and he has constructed that route, having as much regard as possible to the buildings on that route. I cannot understand Professor Beresford Pite's point as to the configuration of the Thames. What the configuration of the Thames has to do with driving a thoroughfare for the relief of the traffic of London I cannot imagine. With regard to the example of Marylebone Road the Professor has properly spoken about it. I know the history of that road, and I remember the energy I exerted as honorary architect to the Metropolitan Gardens Association in endeavouring to get carried out improvements in connection with it. To deal with this matter in a practical way we must arrive at the conclusion, after reading the Traffic Commission's Report, that there is no possibility of getting new thoroughfares in London. The present Government will not give us the money, and the London County Council has exhausted all its resources, or will have done so in a very short time, so we cannot look to them for assistance. What I think we might do is to take advantage of existing thoroughfares more than we do. If the police would divert the traffic more on to the Embankment, parallel with the Strand, and divert the traffic more into Gower Street, parallel with Tottenham Court Road, and take advantage of other great lines of thoroughfares north and south, and east and west, I think we might be able to get some relief from the congestion from which we suffer. Mr. Waterhouse's great north and south thoroughfares are as effective for this relief as it is possible to design thoroughfares; and with regard to the architecture of the new streets Mr. Waterhouse

proposes, I certainly think there are architects living capable of designing buildings worthy of those thoroughfares. One could not adopt a better plan than that already adopted in the case of Regent Street, viz. block-to-block designs uniform in treatment, but each block varied in design. With regard to using the Embankment for tramways, as recommended by the Traffic Commission, to my mind tramways along the Embankment would utterly spoil that noble thoroughfare. That suggestion has been formulated and brought forward entirely in the interests of the so-called British workman, and I certainly hope that tramways will never be permitted there. The width of the thoroughfares is an important point. Mr. Waterhouse recommends that they should not be too wide. Northumberland Avenue from house to house is 90 feet in width; Portland Place, house to house, is 120 feet in width; and the new Piccadilly, at the widening near the Circus, is to be 80 feet in width; but I do not think that any thoroughfare should exceed 100 feet. Another thing we might do with regard to the clearance of London streets is to preserve as much as possible of old London. I was reading yesterday of the wonderful effect of old Temple Bar which now forms the entrance to Theobald's Park, and I think Sir Aston Webb has probably preserved the beautiful pillars that used to be outside Christ's Hospital. If we are to destroy thoroughfares, we might at least preserve some of their more interesting features. With regard to the proposed Board of Architectural Control I should be very sorry indeed to see any sort of control over the architects of this country vested in Spring Gardens, whose officials are, I think, already fully employed. I think Professor Pite rather contradicts himself by first suggesting that the Board should be at Spring Gardens and then finding fault with Aldwych, which is the child of Spring Gardens. It would all depend upon the constitution of the Board, and questions of that sort require very grave consideration. With regard to the education of the public, as Mr. Hudson has referred to the shops in Piccadilly perhaps I may be allowed to refer to that, as it is exercising a great deal of public attention at the moment. The Art Critic of *The Times* in last Friday's Literary Supplement says this with regard to the Regent Street buildings: "They might be made less heavy by abolishing the square blocks that are to interrupt the columns and by greater simplicity of detail generally. Let the architect beware of a recent shocking example—the new Palace of Justice in Rome. It has cost millions, and its decoration, because it is heavy and over-elaborate, is universally condemned. The stateliness of the new Quadrant would be improved, not diminished, if the distinguished architect would retrench a few of his details and simplify some of the lines." As one of the architects planning that hotel, but not responsible for the architecture, though I am in entire agreement with its architectural beauties, I think it will make a magnificent addition to the architecture of England. It is lamentable to my mind that the Art Critic of such an influential paper as *The Times* should not have taken the trouble to inquire a little into details of matters upon which he is writing his opinions. If he did so, he would find that, contrary to there being over-elaboration, the design is one of the simplest in its lines and details that it is possible to conceive. There is certainly no excessive decoration or over-elaboration. The only particle of carving is round the circular windows on the third floor, and the whole of the building, with which I am very familiar, is simple and devoid of elaboration. With regard to the public education on this very matter people are speaking of shops being recessed, of piers that will interfere with the shop fronts, and of widths and heights, in entire ignorance of the actual dimensions which they could obtain at any moment if they took the trouble to consult those who are erecting the edifice. It is regrettable to find such criticism from persons who will not take the trouble to ascertain the facts. With regard to the opening of the Mall, a suggestion made at the Institute some thirty years ago, and which was now being carried out by Sir Aston Webb, I am quite sure we may trust him to do all that is beautiful in connection with the work. But here is an instance of the want of public spirit. No entrance to the Mall from Charing Cross would, to my mind, be perfect unless Drummond's Bank is removed. If Drummond's Bank be retained it will prevent the widening of Whitehall, and it will entirely spoil one of the finest things done in the early part of this century. I will not detain the Meeting longer. I could have said a great deal about the plans before us. I can only congratulate Mr. Waterhouse for producing these plans, but I am afraid they will be like mine of twenty years ago—they will have no practical result. Nevertheless, Mr. Waterhouse's name will be handed down to posterity as one who did his best for the beautification of London in the early part of the twentieth century.

Sir Aston Webb, R.A. [*F.*]: I should not like the occasion to pass without adding my small congratulations and to express the pleasure I have, and that I am sure we all have, that one who bears so honoured a name in this Institute should have revived the interest which his father took, and have given and read us so excellent a Paper. It is one of the most important subjects we have ever had before the Institute. We architects have spent a good deal of time on arts and crafts and chairs and tables and things of that sort, and while we have been fiddling, as I might say, with these things, the greater interests of architecture have been a little apt to slip out of our fingers, and to-day we find our municipal authorities having borough

engineers or surveyors of their own, while architecture is but little considered. Mr. Waterhouse's Paper and the scheme he proposed show how essential it is when lines of streets are laid out that they should be laid out, certainly by engineers and surveyors, but certainly also in conjunction with architects. The very direction of the streets themselves is influenced by architecture, and properly influenced by the architectural effects which occur. However, to-night we are not concerned to examine whether these two main streets are the right lines. That is far too great a subject for me to enter into. Mr. Waterhouse has also protected himself in the same way, I think, by saying that he accepted the proposals of the Commission as being the two best lines, and then he has tried to put them into architectural form. This he seems to me to have succeeded in doing, and he naturally in one part has used Aldwych, and made that form part of his north and south route, whereas by an extraordinary oversight the engineer's plan did not bring in Aldwych at all. There is one thing I should like to say as a sort of principle with reference to straight streets. Sir Melvill Beachcroft has given a most amusing account of the making of Kingsway. Mr. Frederick Harrison, he said, picked up a ruler and ruled two straight lines to show the route, and that was the beginning and the end of Kingsway. That, no doubt, was quite right so far as it went. A great street like that, 100 feet wide, ought to be straight. But it cannot end there. When you have got your straight street, the next matter of importance is the way the two ends are terminated. Reference has constantly been made to Harley Street and Wimpole Street, both of them straight and wide streets; yet they lack dignity. No one would ever consider them of great architectural merit. One reason, to my mind, is that neither of those streets has a termination: they both run into the Marylebone Road at the other end in a most mean and poor way, and they have therefore nothing which can add dignity to them. If you take the Opera House away from the Avenue de l'Opéra in Paris, you would have a comparatively unimportant street. It would be merely a straight road, emphasising nothing, by nothing emphasised. If you take from the Champs-Elysées the Arc de Triomphe, it would still be the Champs-Elysées, but it would be merely an avenue without any interest in comparison. One constantly sees in a park a noble avenue with, say, a fine old Georgian house at the end of it; but go to a park where the house has been removed and you will find the avenue has lost its charm. Therefore I think the great thing in laying out a street is to consider what is to be the termination at the ends. Mr. Woodward very kindly referred to the Mall, and he urged that Drummond's Bank should be removed. Well, I think if you stand at the Mall now and look down towards the palace, whatever you think of the palace, you will see at any rate that there is a certain dignity with a wide road finishing with a great building. But if you turn round and look the other way, though there is the same road, and trees, and so on, the fact of there being no imposing buildings at the other end takes all the dignity out of the wide road. If you pull down Drummond's Bank you will give bolder advertisement perhaps to the Grand Hotel and to the other conglomeration of buildings there, but in my view you will not give the dignity that a wide thoroughfare of this sort requires, and therefore it is that we are now in course of erecting a building which will span right across the thoroughfare, and which will, I hope, apart from its architecture, give it a noble termination. That will give the distinction which the road at that end so greatly needs. If you throw it open you cannot give dignity to that end, because the line of the Strand is different from the line of the Mall. At least, that is how it appears to me, and I am not opinionated, I hope. Professor Pite remarked that we shall not be ready to build on these streets for another half-generation; but I think we are pretty safe, because in all probability the streets will not be ready to be built upon till then. Still, it is very pleasant to learn from him that by that time we shall be ready. The Professor knows, because he has the young under his tuition; he knows what is going on, and therefore speaks with authority! I must just thank the Professor for his kind proposal to fill the South Kensington Museum with old second-hand reredoses; but I do not quite fall in with that suggestion, and hope it will not be carried out. As regards another of Professor Pite's ideas, that perhaps the authority for the improvement of London should be the authority at Spring Gardens, I am not at all sure that something of that sort, with some outside supervision which would keep them in check and make them responsible to somebody, would not be a very good thing. The great London authority is a very great power indeed. If you wish to get good work out of people, you must give them your confidence; and I certainly think so long as we do not give the London County Council our confidence they will not produce altogether what we want. But the great and growing thing that we most of all want is that there should be some authority, whether it is an imperial authority or whether it is a municipal authority—there should be some recognised authority which should be responsible for the proposals as to new streets, and which should have the devising of these schemes. If I may, I should like to read to you a paragraph which I cut out of a paper two or three days ago, from a speech by the Bishop of Birmingham, an outsider in these matters, but who seems to me to put the matter far better than I am able to. He says: "Again, we walk through miles and miles of

streets in our big cities without open spaces, with nothing except what Dickens called 'an uninterrupted view over the way'; and think of what that means never to realise or breathe anything of the largeness which comes in open spaces. Then you see lands not built over, not in cultivation; and you ask, Why? 'Oh, because they are not ripe for development.' But we say they are ripe for development to-day. They have been ripe for development these years past for the food of the community. We want the whole mass of our cities to be organised, planned, laid out. Instead of that, the cities grow at the will of the jerry-builder or the property owner, orderless, shapeless, and without method, because there is no one to plan and forecast, and give a city space and dignity, and room and order—something that can make it worthy to be called a city." Those are the lines on which, I think, we ought to go.

Mr. H. D. Searles-Wood [*F.*] said he would not trespass on the time of the Meeting at that late hour, but asked leave to move the following resolution: "That the Council present to the Government a memorial urging that, as the Royal Commission on London Traffic reports it to be necessary to open up new thoroughfares and communications, it is most desirable, in order to preserve the architecture of London, that the profession of architecture should either be represented on the Board or that a professional adviser or advisers should be employed by the Board that will be formed to deal with the laying-out of the new thoroughfares."

Mr. John Slater [*F.*], in seconding the resolution, said that one thing had been rather lost sight of which he thought should not be ignored in any discussion on London traffic. What was the reason of the congestion which now rendered necessary the creation of these huge streets? It was because our forefathers had no providence and no foresight with regard to the open spaces of their time. And the open spaces of to-day would be, unless we have some control over them, the congested districts of one hundred years hence. Our authorities must look to it that they keep powers for securing for the public in the future open spaces in the districts which are now being built over in such an abominable manner.

Mr. Waterhouse when called upon by the Chairman to reply stated that the hour being very late he would confine himself to briefly expressing his thanks to the various speakers who had alluded to his Paper in such kindly terms. With the permission of the Chairman he would commit to manuscript for publication [*see* p. 427] the remarks which but for the prolongation of the business he had intended to utter in answer to certain criticisms. One thing only he would wish to say at once. Professor Pite had warned the Institute against attempting to bring into being a Frankenstein's monster—an unnatural and almost impossible Board of Architectural Control. He (Mr. Waterhouse) wished to point out that the danger lay in action outside the Institute altogether. The natural and logical outcome of the Report of the Royal Commission would be the formation of a Traffic Board, which among its other functions would, according to the intentions of the Report, have those of the creators and custodians of some scheme of street improvement whether identical with that of the Commissioners or not. The formation of such a Board was so far within the range of practical politics that a Bill (Sir J. Dickson-Poynder's London Traffic Board Bill) was actually in print and before the House of Commons. It was the duty of those interested in the architectural aspects of the case to see that such a Board if formed either had some architectural ingredient, or, better still, employed some such architectural advice as he in his Paper had recommended.

The Chairman: The more we hear of this enormous work which has been proposed by the Advisory Board and the Commissioners, the more I think we feel ourselves indebted to Mr. Waterhouse for having entered upon such a tremendous subject. I entirely concur in many of the views Mr. Waterhouse has expressed, and I consider many of his recommendations in regard to the traffic exceedingly good, particularly that with reference to the utilisation of Kingsway. I think that to form another Kingsway on the eastern side of the present one when that has been created at such enormous expense would be sheer waste and extravagance. I also concur in his recommendation for an increase in the bridge communication between the north and south to the front of the Law Courts. I am perfectly satisfied that the blocks which occur both in the Strand and at Westminster in Parliament Street—and I think the Strand is about the very worst place for a block in London—are due solely to the want of further bridge accommodation. There is no bridge accommodation for vehicles between Westminster Bridge and Waterloo Bridge, and as a consequence we find hundreds of vehicles travelling across Waterloo Bridge and across Westminster Bridge which desire to get to Charing Cross. They cross Waterloo Bridge and immediately block the whole of the Strand traffic trying to get to Charing Cross. My impression is that if a bridge could be erected across the Thames from somewhere in the line of St. Martin's Church or King William Street to Waterloo Station, it would be of enormous service, and would stop all the confusion of traffic at the ends of the present bridges. I am sure of that, because if you come in a cab or an omnibus from Waterloo, you come across Westminster Bridge and turn up Parliament Street to get to where?—Charing Cross. Precisely the same operation is going on all day long across Waterloo Bridge. I think a very great deal might be done if the

police had greater powers, or if they adopted the powers they really have; but they seem indisposed to adopt what will cause them to be at variance with certain sections of the public; in fact, the Commissioner of Police for the metropolis actually said so. Now, the police, if they had the complete regulation of the traffic, could surely direct all the 'buses to go up one or another route, so as to avoid a block at a certain point. But what do we find in the case of Hyde Park Corner? Now, the setting back of the Arch at Hyde Park Corner to where it is now was done with the sole idea that it would get rid of the block opposite the entrance to Hyde Park. What happened? Immediately that place was opened, we expected omnibuses would go right round the front of the Arch away from Piccadilly to Grosvenor Place. No such thing. They have continued to go straight along Piccadilly up to St. George's Hospital, because it suits them better to take their fares that way and to go down Grosvenor Place. That is what causes the block at Hyde Park Corner. But if the police would order the traffic to take a fresh direction, the block would be got rid of. Therefore, if the police had greater powers, and would act up to them, many of these troubles in the traffic would disappear. I think the creation of a Traffic Board is a most excellent suggestion. If properly worked, it might be made of the very greatest service. With regard to the enormous scheme which the Commissioners had issued for the railways round London, extending away to thirty miles, that is not the difficulty just now. It ought to be seen to in the future certainly, but at the present time there is practically no difficulty in getting to London. The difficulty commences after you get there; you cannot get to your destination if you have to traverse the busy centres. Sir Joseph Dimsdale in his separate Report states that the cost of the proposed main avenues would be out of all proportion to the relief given by them. I am strongly of that opinion myself. I do not think they will ever be of the service they are expected to be. Sir George Bartley, also in a separate Report attached to the Report of the Commissioners, says, with regard to the difficulties in the traffic being in the centre parts of the metropolis, that all the difficulties are at such points as I have just named—that is to say, at Waterloo Bridge, Wellington Street, and Parliament Street, &c. It is evident that those bridges which have sufficed for the traffic are not now sufficient, as the population on the south side has increased perhaps by a million. The traffic can only cross with difficulty the bridges originally designed for it; there is not room enough, and when across it is in such volumes that it stops the whole of the traffic at right angles. I feel very confident that additional bridge accommodation is required, and I think Mr. Waterhouse's suggestion that there should be an approach to the front of the Law Courts is an extremely good one. I think if a bridge could be got off the high ground on the level of the street on the north side, from somewhere near St. Martin's Church to Waterloo, it would so distribute the traffic that there would be no further difficulty.

THE CHAIRMAN, finally, put Mr. Searles-Wood's motion, which was carried unanimously.

Mr. H. V. LANCHESTER [*F.*], writing since the meeting, says:—

A reference has been made to the desirability of laying out new streets so that they may connect up, in a dignified manner, our great public buildings. While this is highly necessary from an architectural point of view, it is obvious that the buildings most needing ample traffic facilities are the large railway termini, and their requirements must be taken into account.

Mr. Paul Waterhouse's road and bridge connecting the Law Courts and Bethlehem Hospital seems an admirable scheme, and I would suggest that it offers still further advantages if "double-decked," so as to carry a tramway from Aldwych to the Waterloo Road, while the carriage road above would be continued at the bridge-level over the South-Eastern Railway before dropping down to St. George's Road, thus giving a good high-level approach to Waterloo Station, an approach badly needed by this important terminus.

The removal of Christ's Hospital offers an exceptional opportunity for the commencement, at a relatively small cost, of a straight road leading from the east end of Holborn Viaduct, north of the Central Telegraph Offices, to the junction of Moorgate Street and London Wall, such a road being badly needed for the relief of Newgate Street and Cheapside.

I am glad to see that Mr. Waterhouse adopts the over-and-under arrangement for important crossings. It seems remarkable that the method has not been more used, considering that hints on this point may be found in some of Leonardo da Vinci's sketches.

A straight street is of little value for architectural effect if its gradients are much broken up, and both the general scale and climate of London suggest about half a mile as the maximum length of a straight street leading up to a terminal building.

I fear it is too much to hope that municipalities will obtain powers to lay out land prior to its occupation by buildings, though this has been done abroad with excellent results.

In view of the importance of this subject, might it not be possible, on a future occasion, to make the remodelling of London (from an architectural point of view) the subject of one of the R.I.B.A. competitions?

SUPPLEMENTAL NOTE BY MR. WATERHOUSE.

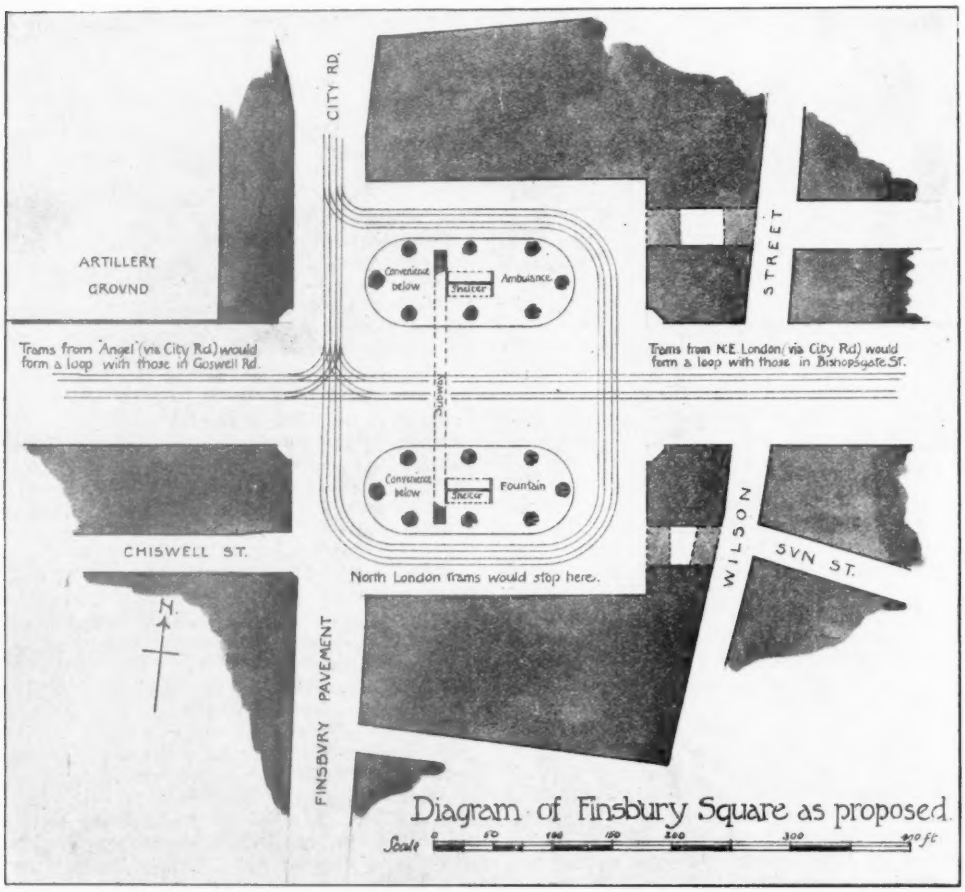
I should be lacking in respect to the various speakers who took the trouble to offer criticisms or remarks upon my Paper if I did not ask for the publication, with the report on the debate, of a few observations which, but for the lateness of the hour, I had intended to include in my reply. Sir Melvill Beachcroft pointed out that Sir J. Dickson-Poynder's Bill was not very likely to become law, but both he and Sir George Bartley were, I think, agreed, in spite of the opinion of Mr. John Burns, that an independent authority other than the London County Council ought to be, and perhaps some day would be, the supreme directing agency in a scheme of comprehensive street formation. That in spite of all obstacles, monetary, proprietary, or physical, some course of action—some attempt at the solution of the problem—must sooner or later be taken in hand seems incontestable; and if this be so, then obviously the sooner a definite scheme is matured and adopted the less risk will there be of haphazard and fragmentary "improvements," and consequently the less outlay in ultimate expense. By Mr. Statham I am understood (and rightly) to be in favour of individualism in street architecture; by Sir Aston Webb I am, I think, gently accused of thinking lightly of straightness. I should like to meet these friendly criticisms, not by withdrawing my arguments in favour of obliquity and idiosyncrasy (I use this word in its literal and inoffensive sense), but by pointing out that I distinctly wish them kept to their proper places and their proper degree. There are points in the line of route I suggest which absolutely demand balance, homogeneity, rectitude, and for that matter severity, severity being a quality which in stately city architecture is essential even where individualism is allowed; but I still hold that there would be whole tracts of street frontage where contrast of design and moderate undulation of direction would no more damage the London avenues than the latter damages the Grand Canal or the former the Via Balbi at Genoa. Sir Aston Webb will, I think, let me point out that his forcible plea for at least a certain amount of straightness and for the arrangement of interesting vistas is one which I much more reverence than ignore. My concentration of streets on the view of All Souls' spire and my attempt to aim an unbending road at the entrance of the Law Courts and at the dome of Bethlehem Hospital are efforts on my part to do homage to the principles for which he pleads.

Professor Pite, whose judgment I always respect, is, I think, a little hard on the Commissioners in his suggestion that the west-to-east avenue leaves the Bayswater Road at too unfrequented a spot and shirks the bustle of the City. In truth, this is its function, not its fault. If it were to quit the Bayswater Road at the Marble Arch, and if it were to attempt to attach itself to the hurly-burly of Cheapside, it would stultify its hypothetical existence. Its object is to take, for example, the man of Notting Hill to Aldgate without bringing him into conflict with the passenger who wants to go from Gray's Inn to the Mansion House. Again, Mr. Pite touched upon a problem which, fascinating as it is in itself, has really nothing to do with our present business. The question what should we make of London if we were starting fair, with nothing but the hills and the river to consider, has no germane connection with our present crux, which is, "What can we do for dear old London as we find it, marked here and there with certain inviolable centres of activity, scored across by streets whose characteristics are almost inalienable, plotted with parks and markets, palaces and *quartiers*, that no effort of the map-maker can annul, and set about with shrines of interest historic, religious, and architectural which sacrilege only would venture to disturb?"

I thank Mr. Searles-Wood for realising, as his motion proves, that the subject is one which demands more than academic discussion. The outcome of the Commissioners' Report may be remote, it may be near. The importance of the issues raised demands that, whenever that outcome occurs, Architecture, if she be not invited, should have the courage to invite herself to co-operation. No false modesty on the part of the representatives of our art should prevent us from insisting that an enterprise which bids fair to have a far-reaching effect on London architecture should at least have some touch of architectural guidance at its inception.

One final word on a practical subject. We have all had our joke at the Commissioners' expense on the subject of tramways. For my own part I certainly do not pin my faith to tramcars as the great locomotive agency of the future, but I do admit that some of them will probably continue to exist, and that consequently it will be the duty of those who are in charge of the traffic problem to do what can be done to minimise their defects. The Commissioners are quite right in realising that trams are at their worst at their termini. Not only do passengers in waiting and passengers discharged cause a congestion on the roadways and pavements, but the shunting and the reversing (whether horses or electric power be employed) cause confusion, and even danger, among traffic. There are two ways of reducing these incon-

veniences. One is to abolish the terminus by continuing the tramways to a further point. But such a continuation would, in the case of certain termini, simply mean running through the City, a course which certainly cannot be said to make for "the greatest happiness of the greatest number." The other way is to make a loop end, *i.e.* to so divert the course of the tram-roads at the terminus that, instead of reversing and retracing their route, they return by a loop line to rejoin the homeward route at a point either adjacent or some hundreds of yards away. A plan which Mr. Mansford has kindly prepared for me, and which is here reproduced, shows how the tram-lines which converge from the north on to the terminus in Finsbury Pavement might be diverted east and west on to loop circuits in Finsbury Square. The gardens of the square—bisected by my proposed east-and-west avenue—might contain suitable waiting pavilions to shelter those waiting for the cars in wet weather; and the whole arrangement would, I think, be one calculated to reduce to order, perhaps even to dignity, the usually rather squalid circumstances of a tramway terminus.



9, Conduit Street, London, W., *16th June* 1906.

CHRONICLE.

Seventh International Congress of Architects, 1906.

At the Inaugural Meeting of the Congress, to be held at the Guildhall on the afternoon of Monday, 16th July, H.R.H. the Princess Louise will be present, and the chair will be taken by his Grace the Duke of Argyll, K.G.

The Executive Committee desire to remind members of the Institute that the privilege of attending any function, visit, or meeting of the Congress is absolutely restricted to members of the Congress of the three classes—donors, subscribing members, and lady members. The only exception made is in the case of the Institute Evening Garden Party at the Royal Botanic Society's Gardens on Thursday, 19th July, when members of the Institute can obtain extra tickets at the rate of 5*s.* each.

THE ANNUAL ELECTIONS.

The results of the elections, with the numbers polled, as reported by the Scrutineers, will be found set out in the Minutes of the Business Meeting last Monday [p. 434], when the Council and Standing Committees were declared duly elected as follows:—

The Council.

President.—Thomas Edward Collcutt.

Vice-Presidents.—James Sivewright Gibson; Edwin Thomas Hall; Henry Thomas Hare; Leonard Stokes.

Hon. Secretary.—Alexander Graham, F.S.A.

Members of Council.—Reginald Blomfield, A.R.A., M.A.Oxon., F.S.A.; John James Burnet. A.R.S.A. (Glasgow); William Douglas Caröe, M.A.Cantab., F.S.A.; Alfred William Stephens Cross, M.A.Cantab.; Edward Guy Dawber; William Flockhart; Ernest George (Past Vice-President); John Alfred Gotch, F.S.A. (Kettering); Edward Augustus Gruning (Past Vice-President); Edwin Landseer Lutyens; Charles Edward Mallows; Edward William Mountford; Ernest Newton; William Alfred Pite; Andrew Noble Prentice; George Halford Fellowes Prynne; John Slater, B.A.Lond. (Past Vice-President); Paul Waterhouse, M.A.Oxon.

Associate Members of Council.—Henry Arthur Crouch; William Adam Forsyth; Sidney Kyffin Greenslade; Henry Vaughan Lanchester.

Representatives of Allied Societies.—Henry Dare Bryan (Bristol Society of Architects); Harry Sutton Chorley, M.A.Oxon. (Leeds and Yorkshire Architectural Society); Edmund Kirby (Liverpool Architectural Society); William Mansfield Mitchell, R.H.A. (Royal Institute of the Architects of Ireland); James Milne Monro (Glasgow Institute of Architects); Harbottle Reed (Devon and Exeter Architectural Society); Harold Ogle Tarbolton (Edinburgh Architectural Association); Howard Henry Thomson (Leicester and Leicestershire Society of Architects); John Henry Woodhouse (Manchester Society of Architects).

Representative of the Architectural Association (London).—Robert Shekleton Balfour.

Standing Committees.

Art.—Fellows: Reginald Blomfield, A.R.A., M.A.Oxon., F.S.A.; William Douglas Caröe, M.A.Cantab., F.S.A.; Edward Guy Dawber; Ernest George; James Sivewright Gibson; Henry Thomas Hare; Professor William Richard Lethaby; Ernest Newton; Edward Schroder Prior, M.A.Cantab., F.S.A.; Paul Waterhouse, M.A.Oxon.—*Associates*: John Anderson; Robert Shekleton Balfour; Arthur Thomas Bolton; William Adam Forsyth; Sidney Kyffin Greenslade; Henry Vaughan Lanchester.

Literature.—Fellows: Reginald Blomfield, A.R.A., M.A.Oxon., F.S.A.; Alfred William Stephens Cross, M.A.Cantab.; Professor William Richard Lethaby; Edward Schroder Prior, M.A.Cantab., F.S.A.; Halsey Ralph Ricardo; Professor Frederick Moore Simpson; Professor Ravenscroft Elsey Smith; Richard Phenè Spiers, F.S.A.; Hugh Stannus, A.R.C.A.; Paul Waterhouse, M.A.Oxon.—*Associates*: William Adam Forsyth; Frank Lishman; William Henry Ward, M.A.Cantab.; Percy Leslie Waterhouse, M.A.Cantab.; Arthur Maryon Watson, B.A.Lond.; Percy Scott Worthington, M.A.Oxon.

Practice.—Fellows: William Henry Atkin Berry; Charles Henry Brodie; Max Clarke; George Hubbard, F.S.A.; Joseph Douglass Mathews; John Murray; Sydney Perks; Alfred Saxon Snell; Thomas Henry Watson; William Henry White.—*Associates*: Edward Greenop; Edwin Richard Hewitt; Herbert Hardwicke Langston; Thomas Edward Pryce; Augustus William Tanner; Robert Stark Wilkinson.

Science.—Fellows: Thomas William Aldwinckle; Max Clarke; Bernard John Dicksee; Matt Garbutt; Francis Hooper; Charles Stanley Peach; Sydney Perks; Herbert Duncan Searles-Wood; Alfred Saxon Snell; Lewis Solomon.—*Associates*: Robert John Angel; Henry William Burrows, F.G.S.; Edwin Richard Hewitt; George Pearson; Augustus William Tanner: Ernest Alexander Young.

The Hon. Auditors are Messrs. Sydney Perks [*F.*] and William Arthur Webb [*A.*].

The Scrutineers of the elections were Messrs. W. Bevan, T. E. Cooper, H. O. Cresswell, R. Clark Edwards, T. P. Figgis, A. L. Guy, John Hudson, Arthur Keen, R. Falconer Macdonald, G. Ernest Nield, W. Henry White, *Fellows*; J. Herbert Belfrage, W. H. Burt, Charles Burton, M. Starmer Hack, F. Hiorns, A. E. Hughes, Thomas A. Pole, G. O. Scorer, J. McLaren Ross, Herbert Shepherd, *Associates*. For the Members of Council 868 papers were returned, 20 of which the Scrutineers had to reject for informality; for the Associate Members of Council 832 were returned, and 22 had to be rejected; for the Standing Committees 810 papers were returned. The counting took

place on Friday the 8th inst., and lasted from 10.30 in the morning till 7.30 in the evening. On the motion of Sir John Taylor at the General Meeting last Monday a vote of thanks to the Scrutineers was passed by acclamation.

Proposed Class of Licentiates R.I.B.A.

At the General Meeting of Monday, the 11th inst., Mr. G. A. T. MIDDLETON [*A.*], in accordance with notice duly given and printed on the agenda, moved the following resolution—viz. "That the Council be instructed to consider the practicability of including all architects practising in the United Kingdom within the scope of the Institute." Mr. Middleton said that when he gave notice of the motion he had been asked what he meant by his proposal, and he had replied that it was a single move in a big game—a gambit move, as it were, in the game of registration—a move in which he risked comparatively little, and which might have far-reaching effects. Before playing his move he would like, he said, to review the position of the matter as it stood at the present moment. Among the ordinary members of the Institute a certain *modus vivendi* or agreement seemed to have been come to. Those in favour of registration and those opposed to it had agreed, as the result of the inquiry which had been held, that the present condition of affairs was not satisfactory; that something must be done to alter it; that that something must be of a drastic nature, necessitating a change in the Institute Charter in all probability, and an appeal to Parliament for an Act of some sort to give the Institute, or some other body, the necessary powers to deal with the existing state of affairs, and to produce something better out of it. Besides the Institute there was another body which was interested, and which had promoted a Bill in Parliament for several Sessions. He perhaps alone of all present was able to know what was going on in the body to which he referred. He wished to say that he had not been put up by that body in the least degree. He was speaking entirely for himself; but he could say, so far as that other body were concerned, that their determination was absolutely steady to proceed with the Bill until it passed; and as matters stood at present it looked as if that time of passing the Bill was drawing nearer and nearer, that it must come within a very few years unless something better could be produced. He had been concerned with this matter for over twenty years, and until lately it had been his belief that there was nothing better than that Registration Bill possible. He had now, however, come to the conclusion that something better was possible, and that it could emanate only from the Institute. It was this something better that he was asking the Council to take into consideration; for it was, he thought, possible to do within the Institute what that Bill would force on the Institute from without. Everyone admitted that it was much better it should be done from the Institute than from anywhere else. That, at any rate, was his belief, and he saw no other way than by including all architects, not actually within the incorporation, but within the scope of the Institute, and within its rules, so that they should be bound by the conditions of professional practice which obtained there. That could be brought about, he believed, by the proposed Licentiate Class—not quite in the way originally proposed, but by compelling under the Act of Parliament all architects in practice who were not within the Institute to take out a licence to practise; to be, in fact, Licentiates in Architecture, and pay a small fee for their licence. That Licentiate Class would be a terminable class, disappearing altogether as time went on, so that there would be no further introductions into that class; but in the future permission to practise should only be given to such as were members of the Institute—that is to say, all future aspirants to practise as architects in the United Kingdom should be compelled to pass the Institute examination either in its present or some modified form as might be found desirable. The proposal to form a Licentiate Class of this sort would, he thought, meet with enormous outside opposition from the well-known practising men, particularly from responsible members of other Societies—the Society of Architects and the Allied Societies, for instance—unless they could be introduced as corporate members of the Institute. The difficulty in the way of doing this either as Fellows or Associates arose under the present Charter and By-laws, but it probably could be brought about by an Act of Parliament, particularly if it were possible to amalgamate the Fellows and Associates of the Institute into one class of Members. There was little reason now for the two classes. Now that all architects at the end of the present year would have to pass the examination, he could see nothing but good in amalgamation; it would do away with countless jealousies and difficulties which had hampered the Institute for many years. Personally, he could see very little difference between the two classes. The Associates had the same right of speech, and very nearly the same right of voting, as the Fellows. So far as he could see, the only privilege the Fellows had was to pay an extra two guineas per annum; but with the great number who would be introduced from outside they might very well waive that and have the whole of the membership subscription fixed at two guineas. There might be many other ways by which the scheme could be carried out. He had suggested one. He was only asking that the Council should take this into consideration.

Mr. A. W. S. CROSS, M.A. [*F.*], said that Mr. Middleton's resolution was of such a moderate nature

that, whether any practical good came from it or not, he saw no objection to its being passed. He had not gone into the details of the scheme, and could not tell how it would work; but at any rate it was worth the Council's attention, and he had very much pleasure in formally seconding the motion.

No further remarks being offered, the resolution was formally put from the Chair, and being voted upon by show of hands was declared carried.

Limited Competitions for Public Buildings.

At the same meeting the Chairman, Sir JOHN TAYLOR, K.C.B., called upon Mr. K. GAMMELL [*A.*] to bring forward two motions of which due notice had been given, but not in time to be printed on the agenda issued with the last number of the JOURNAL.

Mr. Gammell's motions were as follows:—

"That, in view of the fact that limited competitions are a great injustice to the young and unknown members of the profession struggling for recognition, and also not in the best interests of the promoters, this Institute declares that Competitions should not be limited, and that such steps should be taken as may be deemed advisable to discourage public bodies from instituting such Competitions."

"That the Institute exert its influence in obtaining the abolition of the growing custom of penalising non-acceptors by retaining their deposit."

Mr. GAMMELL, in his opening remarks, said that, in view of the discussion of Mr. Waterhouse's Paper which was to be resumed that evening, the time at his disposal was necessarily short, and he asked the indulgence of the Meeting for the possible bluntness of his remarks, which if he had had sufficient time he might have been able to make more diplomatic. His case was as follows. In December 1905 he received a letter from an Associate, written on his own behalf and on behalf of a number of other Associates of the Institute employed by public bodies in London, asking him to bring forward the first motion. The reason his correspondent gave for not bringing forward the matter himself was that it was more than his post was worth to do so. If that were the case, it would be admitted that such a state of things did not redound to the credit of the bodies employing such assistants. It might be urged that his correspondent was labouring under a misapprehension. In that case he would read a passage from a letter from Mr. P. W. Hawkins, which appeared in *The Builder* a short time ago with reference to the recent elections for Fellowship. The passage ran: "Fewer still, it is to be feared, can afford here in London to be publicly identified with the whole-hearted action of the provinces, with its attendant risk of forfeiting the goodwill of their elders." He knew nothing of Mr. Hawkins except that he was an Associate of the Institute, and he assumed, in view of his letter, that he was not employed by a public body. He (Mr. Gammell) had endeavoured to induce a member of greater weight than himself to bring forward this motion, but had failed; hence it was that he found himself in the position of champion for what he termed, mistakenly or otherwise, the cause of youth and fair play. He was in ignorance as to the consensus of opinion one way or the other. If there were dissentients, he hoped he might win some, if not all, of them over to his side. Taking the competitions for the last five years, he had divided them into four classes, and he proposed to give one example from each. He wished it to be understood that in mentioning these examples he was making no personal charge, but merely a general one. His first example was the National Memorial to the late Queen Victoria. For this competition national money for a national object was invited; why then a limited competition? The second example was a public building—King's College Hospital extension. For this purpose money had been invited in a variety of ways; why, then, should the competition be limited to six selected architects? The third example was of a semi-public and semi-private nature—the new College at Bangor, North Wales. There, again, he believed, six architects had been chosen to compete. No doubt it was unreasonable to expect a building constructed by money privately subscribed, in part, if not in whole, to be thrown open to public competition. But it must, at any rate, be a matter for regret that no Welsh name, so far as he could gather, appeared amongst the architects suggested. The fourth example dealt with county work, and he had selected for mention the late competition for the Secondary Schools at Luton. Had the whole of the architects invited to compete been Bedfordshire county men, probably little could have been said about it; but men from other counties were invited. The questions that then arose were: Why these particular architects; and why, above all, a limited competition? The other facts he wished to advance as disabilities were, first, that it was not allowable for members of the Institute to advertise; secondly, non-professional competition of commercial firms; thirdly, the tremendous odds a young man had to face in starting practice, odds which the winning of a competition often removes; fourthly, the request to members to abstain from certain competitions distasteful to the Institute. These points narrowed down the competition horizon very much indeed, and it seemed to him incumbent upon every member of the Institute to vote for this motion.—The speaker, in conclusion, moved his first resolution in the terms above set out.

Mr. WM. WOODWARD [*F.*] said he seconded the motion with great satisfaction. He particularly

remembered the limited competition for the Queen Victoria Memorial, and he was quite certain that the arrangements for that competition did not redound to the credit of the Institute. One difficulty he apprehended would be this: if a limited number of architects were invited to compete they would have to refuse, or they would be doing something which was not in accordance with the general rules of the Institute—assuming, of course, that they were agreed upon the matter, and that the Institute would take steps to discourage these limited competitions.

Mr. C. E. Hutchinson [*A.*], in supporting the motion, said he thought that public bodies and even international bodies had to some extent shown the way out of the difficulty. Quite recently, in the Hague competition, which was open to everyone, a certain number of architects from other countries had been invited to compete. That was, he supposed, with the object of getting the better known practitioners to compete. He thought every member of the Institute agreed with the principle involved, and would support it; he thought that the policy adopted in several recent competitions—viz. to give everybody a chance, and at the same time to invite better known practitioners to compete in addition—was the policy which would meet the difficulties that had so long existed.

Mr. A. W. S. Cross [*F.*], in supporting the proposition, said it was only fair to the younger men that they should have a chance of showing what they could do.

Mr. E. W. Hudson [*A.*] said the question of the competition for the County Hall had been referred to in connection with the Annual Report, and a question had been asked as to the competitors invited. An explanation was given to the effect that eminent men would not send in unless they were invited, but it was not stated whether that invitation conveyed an understanding that they would receive payment for their designs to compensate for the expense of the work.

Mr. Gammell said he understood on very good authority that the competition for the County Hall would be an open and also an invited one. Certain architects would be asked to compete, because it was recognised that it was desirable they should come in, and it was thought that that would be the best way of inducing them to do so.

Mr. G. H. Fellowes Prynne [*F.*], while expressing himself in favour of the resolution, said he thought it would be going a little too far to say that "the Institute" declared that these competitions should not be limited—they ought to say "the Meeting" declared, &c.

Mr. W. H. Haynes [*A.*] said that the motion seemed to him of a retrograde nature. Printed information had been sent to members for many years stating that a Committee was in existence whose aim was to limit the expense of competitions. The expense of forwarding finished plans was more than most young men expected and some had suffered such mortification at their failure, after incurring so much trouble and expense, that they had had to leave the country, and in two cases failure had resulted in suicide. It certainly seemed to him advisable to limit the number engaged upon competitions.

Mr. Edwin T. Hall [*F.*] said he had great sympathy with the proposal. He could not but feel, however, that it required very great consideration before the Institute adopted it, because in the first place it was not limited to competitions in connection with the expenditure of public money. Did Mr. Gammell mean that if people subscribed money to build a church, and they chose to ask half a dozen men to send in designs, those men were to refuse and to say that the competition must be thrown open to the whole profession? If that were his meaning, it would not be possible, and it would certainly not be possible for the Institute to write in such a case to the promoters and say that none of their members could compete; that although they had invited six members of the Institute they must not compete, but the competition must be thrown open to the whole profession. In such a case the game, he thought, would not be worth the candle. A church might be a very reasonable work for a few men to compete for, but if 150 men were to compete no architect in ordinary busy practice would dream of going in for it. It might be, again, that the promoters desired particular men to compete. He was in favour of giving to young men every chance; but they must not tie the hands of the Institute in such a way as to prevent promoters choosing architects to compete. He felt that the proposal was far too drastic to go forth with the authority of a General Meeting. To show that the Council were quite in sympathy with the spirit of this motion, when they were asked to advise the London County Council with regard to the competition for the new County Hall, the Council unanimously voted for an open competition. That was done to give every young man a chance. They also suggested that a few others should be invited. Known men who were very busy sometimes did not see their way to go in for competitions, and he was sure the public would not say this proposal was in their interest if as a result the busy men refrained from taking part in competitions. By all means let everyone have a chance of entering these competitions—the more open they were, the better. It was not, however, always practicable, and he thought there should be grave pause before such a resolution was passed. He should like to suggest, as an amendment, that the matter be referred to the Council with a view to their reporting to a subsequent General Meeting as to the practicability of carrying out the spirit, if not the letter, of the proposal which had been submitted.

Mr. W. Henry White [*F.*] said he would second

the amendment, in order that the matter might be referred to the Council for further consideration.

Sir ASTON WEBB, R.A. [*F.*], said he had had something to do with competitions from time to time, both open and limited, and he should like to see young men have all the opportunities they wanted. They ought not, however, to have too many opportunities for competition, for he did not think they would make a living by competitions. But an occasional little venture he saw no harm in at all. He thought Mr. Hall's proposal the only reasonable one: the Council should be asked to undertake without delay the consideration of the question. He did not think, however, that it would be wise for the Meeting to lay down a broad principle without having the advantage of the consideration of the Council as to how it might be carried out.

Mr. GAMMELL pointed out that his motion had to do only with public buildings erected with public moneys. It was not a question of buildings erected partly by public funds and partly by private funds.

Mr. H. V. LANCHESTER [*F.*] said he thoroughly sympathised with the proposer of the motion. The limitation placed upon the resolution seemed a very moderate one. There was a strong feeling among public bodies that they were impeded by such restrictions; it had been implanted in them by the theory of public competition in trade matters, such as tenders for builder's work, &c. For the sake of the profession and with a view to getting good results they should take advantage of that feeling by urging that competitions should be open, whether the funds for the work were to be provided by public money or not. He certainly agreed with the principle of the motion and should vote in support of it.

THE CHAIRMAN expressed his concurrence with the remark that had been made, that that Meeting had not the right to decide a question without its having first been brought to the notice of the Council. He thought the resolution should be worded so as to go to the Council as a recommendation to take into consideration the desirability of competitions being open to the whole profession, and to take such steps as may be deemed advisable to discourage public bodies from instituting limited competitions. The Council should be put in the dominant position to begin with.

Sir ASTON WEBB said he was still in favour of Mr. Hall's amendment. The Council would then be in a position to thoroughly digest the proposal to amend it if they thought necessary, and to bring it up again at another meeting.

Mr. JOHN SLATER [*F.*] pointed out that members had had no previous notice of this motion, and for that reason they ought not to come to a decision at that meeting. It was rather a drastic proposal, and if it had been published in the JOURNAL, as under ordinary circumstances would have been the case, every member of the Institute would have had notice, and a decision might have been come to at that meeting. Mr. Gammell, as a fact, had given the notice required, and it was felt that he ought not to be prevented from bringing his motion forward. Nevertheless the motion had been practically sprung on the Meeting—he did not say it in any offensive sense, but it was the case—and he could not help thinking, even if Mr. Gammell carried his motion, he would carry it with greater force if he waited for another meeting when due notice might be given.

Mr. GAMMELL expressed his entire agreement with Mr. Slater's proposal, and said if he could bring the motion up again he should be pleased to let it stand over.

THE CHAIRMAN: For this occasion you withdraw your motion?

Mr. GAMMELL: I withdraw the motion, and it will be slightly amended when I again bring it forward.

THE CHAIRMAN: Do you also agree to the suggested amendment?

Mr. GAMMELL: No; I will amend the motion and bring it forward again.

The New Government Buildings.

In the House of Commons on Thursday last Mr. P. W. Wilson (St. Pancras, S.) asked the First Commissioner of Works whether he had received any representations respecting the towers which appeared upon the plans of the new Government buildings facing Great George Street; and whether he was prepared to authorise the construction of any or all of those towers.

Mr. Harcourt, in reply, said he had received a strong representation from the Council of the Royal Institute of British Architects in favour of the completion of the towers on the Great George Street front of the new public offices, and that he had replied to them in the following letter:—"I am much obliged by your letter of the 25th. Though I maintain my own opinion that the proposed very high towers on the Great George Street front of the new public offices are not architecturally or æsthetically desirable, I am not prepared to put my artistic opinions against those of the Council of the Royal Institute of British Architects. I have therefore given immediate instructions that the single tower of the building now in course of construction shall be continued and completed on the lines originally laid down by Mr. John Brydon. I need not say that I shall always greatly value any criticism or assistance that the Institute is good enough to afford me in that part of my duties which is connected with architecture." Mr. Harcourt added that he had asked the contractors to see that, as far as possible, the masons to be engaged on this work shall be those who were discharged on its suspension, and the contractor had promised to meet his wishes.

Royal Victoria Hospital, Belfast.

Messrs. Henman and Cooper request that the following extracts from the last Annual Report of the hospital should be published in the JOURNAL:

"The Annual Meeting was held in the Extern Department, at twelve o'clock noon, on Wednesday, the 28th March 1906.

"R. H. S. Reade, Esq., D.L., occupied the chair.

"The Hon. Secretary (Mr. Joshua Pim) submitted the Annual Report, which was taken as read, and the Hon. Treasurer (Mr. James Davidson) read the financial statement, after which the Chairman moved that the Report be received, adopted, and entered upon the Minutes.

"This was seconded by Sir Otto Jaffé, and passed unanimously.

"The Royal Victoria Hospital is doing a great and beneficent work, as the large number of patients skilfully treated within its walls abundantly testify; and this is corroborated by the practically unanimous verdict of all visitors thereto, but more especially by that of the distinguished medical and surgical experts from many parts of the world, who have pronounced it one of the best arranged and most up-to-date hospitals it has ever been their good fortune to inspect."

The Cost of Public Elementary School Buildings.

The Report of the Education Committee of the London County Council, just issued, states that the Committee have gone thoroughly into the question of the cost of erecting schools, and the experience gained during their investigations will result, they think, in a decrease in the future cost of erection of these buildings, without detriment to the necessarily high standard of quality and efficiency the Council have to maintain. The Committee have had submitted to them plans of a typical school for 1,176 children, consisting of three one-story buildings, to be erected on a perfectly level and large site to be selected, requiring no retaining walls or terracing, nor extra deep foundations, and the boundaries being of oak fencing instead of a brick wall. The cost of a school of this design is estimated as follows:—

Main school buildings complete, £13,664, equivalent to £11. 12*s.* 4*d.* a place.

Main school buildings, including inclosing and draining site, &c., £17,834.

Total cost, including possible extras, lithography, furniture, supervision charges, &c., £19,659, equivalent to £16. 14*s.* 4*d.* a place.

The cost per foot cube would be 6½*d.*

Touching architectural considerations, the report says: "An item in the cost of schools is the amount of decorative detail put into them. The policy of the late authority was almost always to give these structures, as public buildings, some dignity of appearance, and to make them ornaments rather than disfigurements to the neighbourhoods in which they were erected. Where, in a few casess, triving after the sternest economy has led to very plain buildings being erected, as in the case of Trundley's Road (Deptford), Enfield Road (Hackney), Ellerslie Road (Hammersmith), and one or two others, the resentment of those who contrasted the appearance of these with other schools in the neighbourhood led to a reversion to the more ornamental type. It was found that the difference between the cost of buildings erected on utilitarian lines and those designed with some regard to materials, colour, and style was about 5 per cent. At the same time this ornamental appearance has been secured either by richness of detail or by a dignified grouping of masses—in some few instances a greater amount of decorative work has been introduced into the buildings than has been permitted to continue after fuller experience of the cost involved."

Fletchers on Dilapidations, 6th Edition.

Messrs. Banister F. and H. Phillips Fletcher send the following in reference to the review of their book in the last number of the JOURNAL:—

"In the review of the above book Mr. Max Clarke suggests that some information as to fees should be given, and that the liability of lessors and lessees in this respect might be discussed.

"May we point out that Appendix I. gives the charges sanctioned by the Schedule of the Institute? Information as to the liability for the payment of fees by lessors and lessees is to be found in the case of *Skinners' Company* v. *Knight*, and the Conveyancing and Law of Property Act, 1892.

"The report of this case (and others affecting this issue), together with the extract from the Act, are fully set out on pages 111 to 120 of our book."

The Sanitary Congress.

The Royal Sanitary Institute preliminary programme of their Congress to be held in Bristol from the 9th to the 14th July is now issued. Sir Edward Fry is President of the Congress. The Architectural Section is presided over by Mr. Edwin T. Hall [*F.*], and among the Papers is one by Mr. A. Saxon Snell [*F.*] on "The Construction of Isolated Homes for the Aged Poor *versus* The Workhouse." A Conference of Municipal Representatives will be held, and the subject of "The Rational Extension of Modern Cities" introduced by Mr. Arthur Richardson, M.P.

Obituary.

In *The Times* of yesterday is announced the death, on the 13th inst., at the age of ninety-four, of Mr. ANDREW MOSELEY, for sixty-eight years a member of the Institute. Mr. Moseley joined the Institute as Associate in 1838, proceeded to the Fellowship in 1850, and was placed on the list of Retired Fellows in 1902. Mr. Moseley had served on the Institute Council.

Intimation has also been received of the death of Mr. PHILIP WILKINSON, of 68 Lincoln's Inn Fields, *Fellow*, elected 1890.

The late George Low [*F.*].

At the ripe old age of eighty-two, Mr. George Low has passed away, having kept up his professional work till within a few weeks of his death. At the early age of 14½ years he was placed in the offices of George Smith (Surveyor to the Mercers' Company) and William Barnes, with whom he served his articles. In 1842 he was elected a Student of the Royal Academy of Arts, and in 1844 was awarded by the Council of the Academy the first Silver Medal for the best measured drawings of the Church of St. Mary Woolnoth. These drawings were presented by Mr. Low, some years ago, to the Institute Library. In 1847 he commenced practice, and in 1850 was elected an Associate of the Institute, becoming a Fellow in 1860. In 1850 his design for a Town Hall and Market at Hemel Hempstead was selected in open competition, and the building was subsequently erected from his designs, and later added to, in conjunction with his son, Mr. Ralph Low [*A.*]. In 1855–65 he erected large business premises in Northampton and Dunstable. Subsequently, up to his death, he enjoyed a large general practice, varied in character, and consisting of churches, Church schools, Board schools, private residences, and large commercial premises in the City and elsewhere. Since 1885, in partnership with his son, Mr. Ralph Low, he erected a large number of warehouses, blocks of shops, business premises, and private residences. Mr. Low was well known as a compensation surveyor and arbitrator, being engaged in a very large number of these cases for the Metropolitan and Metropolitan District Railway in the acquistion of property for the construction of their lines, and was one of the arbitrators employed by the Post Office authorities in connection with the property required for the new Post Office buildings in St. Martin's-le-Grand. The practice is being continued by his son.—Wm. Woodward.

MINUTES. XV.

At the Fifteenth General Meeting (Business and Ordinary) of the Session 1905–06, held Monday, 11th June 1906, at 8 p.m.—Present: Sir John Taylor, K.C.B., *Vice-President*, in the Chair, 25 Fellows (including nine members of the Council), and 39 Associates (including one member of the Council), the Minutes of the Meetings held 21st May 1906 [p. 396] were taken as read and signed as correct.

The Hon. Secretary drew attention to a list of works recently presented to the Library [see *Supplement*], and a cordial vote of thanks was passed to the donors.

The Secretary announced the results of the polling for the election of the Council and Standing Committees for the official year 1906–07, as reported by the Scrutineers, viz.:—

President.—Thomas E. Collcutt [*unopposed*].

Vice-Presidents.—James S. Gibson, Edwin T. Hall, Henry T. Hare, Leonard Stokes [*unopposed*].

Honorary Secretary.—Alexander Graham [*unopposed*].

Members of Council (18).

Elected: Ernest George, 646 votes; Reginald Blomfield, 638; Guy Dawber, 551; Ernest Newton, 548; John Slater, 540; Paul Waterhouse, 536; A. N. Prentice, 479; J. Alfred Gotch, 476; W. D. Caröe, 459; E. A. Gruning, 459; A. W. S. Cross, 452; G. H. Fellowes Prynne, 435; J. J. Burnet, 428; E. W. Mountford, 423; E. L. Lutyens, 404; C. E. Mallows, 386; Wm. Flockhart, 366; Wm. A. Pite, 365.

Not elected: W. H. Seth Smith, 353 votes; John W. Simpson, 348; Professor F. M. Simpson, 341; C. Harrison Townsend, 335; George Hubbard, 332; W. H. Atkin Berry, 309; S. Perkins Pick, 302; H. Percy Adams, 292; Edmund Wimperis, 263; Maurice B. Adams, 260; Max Clarke, 258; Frank T. Verity, 251; R. Selden Wornum, 238; W. Gillbee Scott, 235; Charles Heathcote, 225; Frank L. Pearson, 218; Lewis Solomon, 200; John Murray, 184; A. Hessell Tiltman, 164.

Associate Members of Council (4).

Elected: H. V. Lanchester, 623 votes; S. K. Greenslade, 474; W. A. Forsyth, 424; H. A. Crouch, 399.

Not elected: H. W. Wills, 269 votes; C. E. Hutchinson, 241; E. A. Young, 198; H. Passmore, 190; S. H. Hamp, 176.

Representatives of Allied Societies (9).

Elected: H. S. Chorley, 623 votes; W. M. Mitchell, 623; E. Kirby, 611; H. D. Bryan, 609; J. H. Woodhouse, 575; H. O. Tarbolton, 541; J. M. Monro, 531; H. Reed, 528; H. H. Thomson, 462.

Not elected: J. T. Cackett, 461 votes; A. Pollard, 438; J. H. Phillips, 403; P. H. Thoms, 226.

Hon. Auditors.

Sydney Perks, *Fellow*; W. Arthur Webb, *Associate*.

Art Standing Committee.

Fellows (10).—*Elected*: Ernest George, 662 votes; Henry Thomas Hare, 601; Ernest Newton, 547; Edward Guy Dawber, 520; James S. Gibson, 458; Reginald Blomfield, 448; Professor Lethaby, 445; E. S. Prior, 431; Paul Waterhouse, 428; W. D. Caröe, 417.

Not elected: J. Macvicar Anderson, 416 votes; J. J. Burnett, 409; William Flockhart, 401; John W. Simpson, 350; H. C. Corlette, 325; George C. Sherrin, 227; Robert Watson, 220.

Associates (6).—*Elected*: W. A. Forsyth, 641 votes; R. S. Balfour, 633; S. K. Greenslade, 631; H. V. Lanchester, 614; A. T. Bolton, 596; John Anderson, 563.

Not elected: J. S. Lee, 354 votes.

Literature Standing Committee.

Fellows (10).—*Elected*: R. Phenè Spiers, 632 otes; Reginald Blomfield, 597; Professor Lethaby, 505; E. S. Prior, 497; Professor F. M. Simpson, 489; Paul Waterhouse, 482; Hugh Stannus, 466; A. W. S. Cross, 437; Halsey Ricardo, 434; Professor Elsey Smith, 373.

Not elected: H. Favarger, 331 votes; G. H. Fellowes Prynne, 330; C. Harrison Townsend, 329; John Bilson, 272; H. C. Corlette, 272; C. E. Mallows, 261; Ambrose Poynter, 240; R. Falconer MacDonald, 169.

Associates (6).—*Unopposed*: W. A. Forsyth, Frank Lishman, W. H. Ward, P. Leslie Waterhouse, Arthur M. Watson, Percy S. Worthington.

Practice Standing Committee.

Fellows (10).—*Elected*: W. H. Atkin Berry, 497 votes; A. Saxon Snell, 494; Max Clarke, 492; J. Douglass Mathews, 471; T. H. Watson, 469; W. Henry White, 468; Geo. Hubbard, 455; John Murray, 419; Sydney Perks, 383; C. H. Brodie, 370.

Not elected: H. A. Satchell, 334 votes; Ernest Flint, 331; C. Reilly, 312; A. H. Kersey, 307; T. Batterbury, 298; Andrew Murray, 268; Brook Kitchin, 213; Wm. Pywell, 137.

Associates (6).—*Elected*: A. W. Tanner, 519 votes; T. E. Pryce, 464; E. Greenop, 421; E. R. Hewitt, 421; H. H. Langston, 408; R. Stark Wilkinson, 405.

Not elected: W. Chas. Waymouth, 342 votes; G. R. Julian, 310; A. R. Mayston, 256; E. Carritt, 225.

SCIENCE STANDING COMMITTEE.

Fellows (10).—*Elected*: Max Clarke, 515 votes; H. D. Searles-Wood, 502; B. J. Dicksee, 476; A. Saxon Snell, 441; C. Stanley Peach, 425; Sydney Perks, 402; T. W. Aldwinckle, 391; Francis Hooper, 383; Lewis Solomon, 382; Matt Garbutt, 364.

Not elected: Ernest Flint, 347 votes; B. Tabberer, 343; Arthur Crow, 318; A. Ashbridge, 309; G. Hornblower, 303; Wm. Dunn, 286; Arthur J. Gale, 284; W. E. V. Crompton, 249.

Associates (6).—*Elected*: H. W. Burrows, 501 votes; A. W. Tanner, 470; E. R. Hewitt, 432; Geo. Pearson, 369; E. A. Young, 361; R. J. Angel, 300.

Not elected: E. J. Bennett, 286 votes; F. W. Hamilton, 284; S. B. Beale, 274; Wm. Jacques, 244; F. W. Ledger, 232.

The Chairman declared the Officers, Council, and Committees duly elected in accordance with the Scrutineers' Report, and a vote of thanks to the Scrutineers for their services in connection with the election was passed by acclamation.

The following candidates for membership were elected to the various classes by show of hands under By-law 9:—

AS FELLOWS (40).

CHARLES HERBERT ASHWORTH (Dublin).
THOMAS BAIRD, JUN. (Glasgow).
ANDREW BALFOUR (Glasgow).
ROBERT SHEKLETON BALFOUR [*A.* 1893; *Institute Medallist Drawings* 1892, *Pugin Student* 1894, *Tite Prizeman* 1895, *Soane Medallist* 1896].
ANDREW BLACK (Glasgow).
GEORGE BLAND (Harrogate).
PERCIVAL BOWN (Harrogate).
WALTER HENRY BRIERLEY, F.S.A. (York).
JOHN DIXON BUTLER.
JOHN ARCHIBALD CAMPBELL (Glasgow).
HENRY EDWARD CLIFFORD (Glasgow).
JOHN McLEAN CRAWFORD (Glasgow).
NEIL CAMPBELL DUFF (Glasgow).
WILLIAM NEWTON DUNN [*A.* 1882].
WILLIAM ADAM FORSYTH [*A.* 1895].
WILLIAM VENN GOUGH [*Class of Proficiency Vol. Arch. Exam., formerly Associate*] (Bristol).
JOHN HAMILTON (Glasgow).
WILLIAM CECIL HARDISTY (Manchester).
FREDERICK GEORGE HICKS (Dublin).
JAMES KENNEDY HUNTER (Ayr, N.B.).
ARTHUR BLOMFIELD JACKSON [*A.* 1891].
RICHARD CROFT JAMES [*A.* 1896] (Bristol).
WILLIAM THORPE JONES (Durham).
HENRY VAUGHAN LANCHESTER [*A.* 1889, *Owen Jones Student* 1889–90].
CHARLES HENRY LÖHR [*A.* 1878].
ROBERT STODART LORIMER [*A.* 1890], A.R.S.A. (Edinburgh).
ROBERT JOHN MACBETH (Inverness).
WILLIAM F. McGIBBON (Glasgow).
HUGH PATRICK GU RIN MAULE [Master of the Architectural Association Day School, *Inst. Medallist* (*Drawings*) 1896].
ROBERT MILLER (Glasgow).
EDWIN ALFRED RICKARDS.
FREDERICK WILLIAM ROBERTS (Taunton).
GEORGE HANSON SALE (Derby).
ROBERT DOUGLAS SANDILANDS (Glasgow).
ALEXANDER SKIRVING (Glasgow).
JOHN THOMSON (Glasgow).
WILLIAM STREET WILSON [*A.* 1882] (Durban, Natal).
WILLIAM HENRY WOOD (Newcastle-on-Tyne).
HENRY THOMAS WRIGHT (Newcastle-on-Tyne).

AS ASSOCIATES (4).

EDWIN ALBERT AGUTTER [*Probationer* 1898, *Student* 1902, *Qualified for Associateship*, 1905] (Pietermaritzburg, Natal).
JOHN BARR [*Qualified Special Examination*, 1905] (New South Wales).
ASHLEY FLORIAN BENJAMIN [*Probationer* 1902, *Student* 1902, *Qualified for Associateship* 1905].
JOHN TALLENTS WYNYARD BROOKE [*Probationer* 1898, *Student* 1901, *Qualified for Associateship*, 1904] (Manchester).

AS HON. ASSOCIATE.

CECIL HARCOURT SMITH, LL.D., Keeper of Greek and Roman Antiquities at the British Museum.

AS HON. CORRESPONDING MEMBERS (2).

JOSEPH THEODORE JOHN CUYPERS, C.E. (Amsterdam).
HERMANN MUTHESIUS (Berlin).

Mr. G. A. T. Middleton [*A.*] having moved in accordance with notice duly given and printed on the agenda, Mr. A. W. S. Cross, M.A. [*F.*], seconded, and it was

RESOLVED, that the Council be instructed to consider the practicability of including all architects practising in the United Kingdom within the scope of the Institute.

Mr. K. Gammell [*A.*], in accordance with notice duly given in compliance with the By-laws, but not received in time to be printed on the agenda and issued in the usual manner, brought forward the following motions—viz.:—

"That, in view of the fact that Limited Competitions are a great injustice to the young and unknown members of the profession struggling for recognition, and also not in the best interest of the promoters, this Institute declares that Competitions should not be limited, and that such steps should be taken as may be deemed advisable to discourage public bodies from instituting such Competitions."

"That the Institute exert its influence in obtaining the abolition of the growing custom of penalising non-acceptors by retaining their deposit."

Mr. Gammell moved, and Mr. Wm. Woodward [*F.*] seconded, the first resolution as above printed.

Mr. Edwin T. Hall, *Vice-President*, moved as an amendment, and Mr. W. Henry White [*F.*] seconded, that the matter be referred to the Council with a view to their reporting to a General Meeting as to the practicability of carrying out the spirit, if not the letter, of Mr. Gammell's proposal.

After some discussion Mr. Gammell accepted a suggestion of Mr. John Slater, B.A. [*F.*], that in view of the fact that members had not received notice of the motions he should withdraw them for the present, Mr. Gammell stating that he would bring them up again in a slightly amended form.

Discussion was resumed of the Paper by Mr. Paul Waterhouse, M.A. [*F.*], entitled "Some Observations on the Report of the Royal Commission on London Traffic, with special reference to the proposed Formation of New Thoroughfares," and on the motion of Mr. H. D. Searles-Wood [*F.*], seconded by Mr. John Slater, the Meeting

RESOLVED, unanimously, that the Council present a Memorial to the Government urging that, as the Royal Commission on London Traffic reports it to be necessary to open up new thoroughfares and communications, it is most desirable, in order to preserve the architecture of London, that the profession of architecture should either be represented on the Board, or that a professional adviser or advisers should be employed by the Board that will be formed to deal with the laying-out of the new thoroughfares.

The proceedings then closed, and the Meeting separated at 10.15 p.m.

Photo. Miss L. Connell, 50 Grove End Road, N.W.

Yours truly
L Alma Tadema

SIR LAWRENCE ALMA-TADEMA, O.M., R.A., F.S.A.
HON. FELLOW R.I.B.A.
ROYAL GOLD MEDALLIST 1906.